HITACHI

SERVICE MANUAL

TK | No.3643E

VT-F787EM (J,SWN,HKN)

PHOTO: VT-F787EM (SWN)

SPECIFICATIONS (for the SWN model)

Format:	VHS, PAL, NTSC & SECAM
Recording:	Rotary Two-Head Helical Scan Azimuth Recording
Head:	Double Azimuth 4 heads 2 for SP 2 for LP/EP
Tape Speed:	PAL/SECAM/MESECAM: 23.39 mm/sec (SP), 11.7 mm/sec (LP) NTSC: 33.35 mm/sec (SP), 16.67 mm/sec (LP) (playback only), 11.12 mm/sec (EP)
Tape Width:	12.7 mm
Operation Temperature:	5°C to 40°C
Video:	PAL, SECAM & MESECAM colour & CCIR monochrome signal 625 lines Standard (3.58 MHz) and modified (4.43 MHz) NTSC colour & EIA standard 525 lines
Recording Time:	480 min. (using E-240 cassette) (PAL/SECAM LP mode) 480 min. (using T-160 cassette) (NTSC EP mode)
Antenna Input:	PAL mode: VHF: 2 – 12, UHF: 21 – 69, CATV: S1 – S41 American NTSC mode: VHF: 2 – 13, UHF: 14 – 69, CATV: L – W + 29 Japanese NTSC mode: VHF: 1 – 12, UHF: 13 – 62
RF Output:	UHF channel 37 (32 – 42 adjustable) ..... System I, G and K UHF channel 34 – 36 (29 – 42 adjustable) ..... NTSC
Video Input:	0.5 to 1.5V p-o 75 ohm Unbalanced
Video Output:	1V p-p 75 ohm Unbalanced
Audio (Linear)	
Input:	–3.8 dBm 50 Kohm
Output:	–3.8 dBm 1 Kohm
S/N Ratio:	43 dB
Frequency Range:	70 Hz to 12 kHz
Hi-Fi Audio	
Frequency Range:	20 Hz to 20 kHz
Dynamic Range:	More than 90 dB
Wow and Flutter:	Less than 0.005% WRMS
Power:	AC 110V, 115–127V, 200–220V, 230–250V, 50/60 Hz
Power Consumption:	30W (Including timer)
Timer:	24-hour digital indication
Cabinet Size:	435 (W) x 103 (H) x 384 (D) mm
Weight:	7.5 kg
Accessories Included:	1 – Aerial cable 1 – Infrared remote control unit 1 – Mains plug adaptor 1 – US pin cord 3 – Batteries

* Design and specifications are subject to change without notice.

VHS

This video desk is a VHS type video recorder. For proper operation, only the VHS type cassette must be used.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CASSETTE RECORDER

May 1992 Video Systems Operation

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SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers' parts. Critical parts are marked ⚠ in the schematic diagrams.

2. Before returning a repaired unit to the customer, the servicing technician must thoroughly test the unit to assertain that it is completely safe to operate without danger of electrical shock.

COMPARISON WITH PREVIOUS MODEL

	ITEM	VT-F787EM(J)	VT-F787EM(SWN)	VT-F787EM(HKN)
GENERAL	VIDEO HEADS	DA4 HEADS + Hi-Fi		
	FLYING ERASE HEAD	NO		
	BASIC CHASSIS TYPE	ZF2		
	CAPSTAN DRIVE			
	CYLINDER MOTOR			
	POWER SUPPLY	4 VOLTAGE POWER SOURCE		
VIDEO	PAL COLOUR	B/G I		
	SECAM COLOUR	B/G D/K L(from Video IN only)		
TUNER	TUNING SYSTEM	F.S TUNING		
	CATV	YES		
	HYPER	YES		
	MPX	NO		
	CHANNEL PRESET NO.	69CH		
	RF CONVERTER	G/I/K/M		
	OUTPUT CHANNEL	34-36	37	37
	OUTPUT VARIABLE CHANNEL	29-42	32-42	32-42
	CHANNEL PRESET BY VTR	YES		
	NICAM 5.5M	NO	YES	NO
	NICAM 6.0M	NO	NO	YES
	MULTIPLEXER FOR JAPANESE	YES	NO	NO
	MULTIPLEXER FOR NORTH AMERICA	NO		
TIMER	REC. PROGRAMME	8 PROG./1 YEAR		
	DIMMER	YES		
	NEW IRT	YES		
	BACK-UP TIME	ABOUT 30 MIN.		
	TIMER REC ALARM	YES		
DISPLAY	TIME (24, AM/PM)	24		
	PROGRAMME REVIEW	OSD		
	OSD FEATURE LIST	YES		
	OSD LANGUAGE	2(UK, D)		
AUTO FEATURE	AUTO DATE REC	NO		
	AUTO TRACKING	YES		
	AUTO OPERATE ON	YES		
	AUTO REWIND	YES		
	AUTO TAPE CANCELLER	YES		
OTHER FEATURE	AUTO PLAY	YES		
	AUTO EJECT	YES		
	QUICK MECHA.	YES		
	AUTO HEAD CLEANER	YES		
	PROGRAMME EDIT	NO		
	LINEAR TIME COUNTER	YES		
	HI-SPEED REWIND	NO		
	SYNCHRO EDIT	YES		
	VIDEO DUBBING	YES		
	TAPE RETURN	YES		
	COUNTER MEMORY	NO		
	FAST PLAY	YES		
	ENDLESS PLAY	YES		
REMOTE CONTROL	VISS	YES		
	PROGRAMME SETTING	LCD		
	CLOCK SETTING	LCD		
	VTR1/VTR2	YES		
	JOG/SHUTTLE	YES		

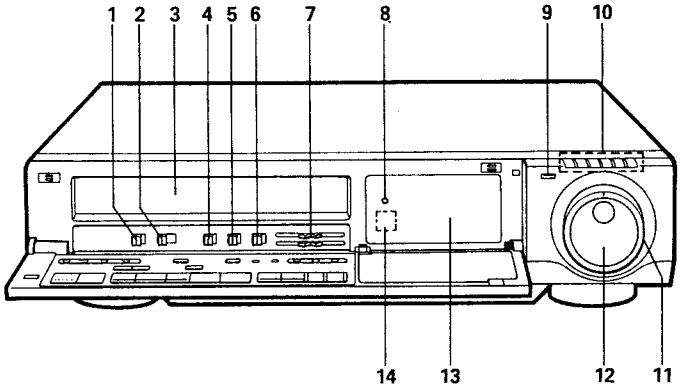
MAIN CONTROL ICs

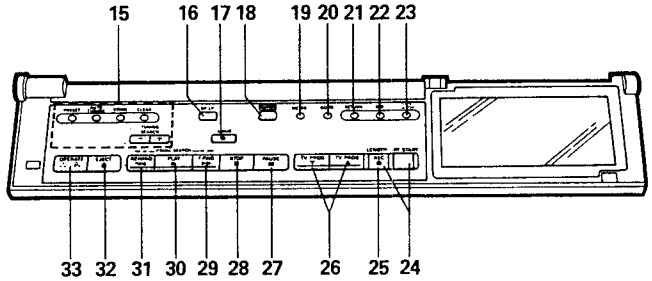
ITEM	VT-F787EM	
VIDEO SYSTEM		
Y/CHROMA PROCESS	HT7417	(IC201)
NTSC-PAL CONV.	M52063SP	(IC301)
SECAM DET.	XRA7025L	(IC351)
PRE AMP/HEAD SW		
VIDEO HEAD SW	HA118122ANT	(IC1P)
AUDIO HEAD AMP	BA7740S	(IC2P)
FM DET.	BA7047S	(IC3P)
ON SCREEN DISPLAY		
CHARACTER GEN./SYNC GEN.	M50558-108SP	(IC1401)
PLL H.SYNC GEN.	NJM2229S	(IC1402)
4 fsc GEN.	74HC00	(IC1403)
AUDIO		
FM AUDIO PROCESS	XRA7703KP	(IC501)
COMPRESSOR	BA6138	(IC502)
LINEAR AUDIO PROCESS	XRA7767A	(IC401)
SERVO		
SERVO CONTROL	HD49741ANT	(IC601)
CYLINDER MOTOR DRIVE	XRA6459P1	(IC602)
SYSTEM CONTROL		
SYSTEM CONTROL μP	μPD75516-294	(IC901)
TAPE LOADING DRIVER	XRA6209U4	(IC902)
AUTO TRACKING	M50927-218SP	(IC1901)
TIMER		
TIMER μP	M38103M6-108SP	(IC701)
EA-ROM	M6M80041	(IC702)
REGULATOR		
SWR CONTROL	TL1451A	(IC851)
SKEW/SECAM		
SECAM CHROMA PROCESS	M51645P	(IC1301)
1/3H DELAY	TL8828	(IC1204)
SKEW SW	NJM2248S	(IC1203)
SWITCHING PULSE GEN.	BU4011B	(IC1205)
NICAM		
QPSK DEMOD.	TA8662N	(IC1801)
NICAM DECODE	CF70124	(IC1802)
D/A CONV.	TDA1543	(IC1803)
INTEGRATOR	BA4560	(IC1805)
INPUT SW	M5201L	(IC1806,IC1807)

This service manual shows instructions on use of the SWN model.

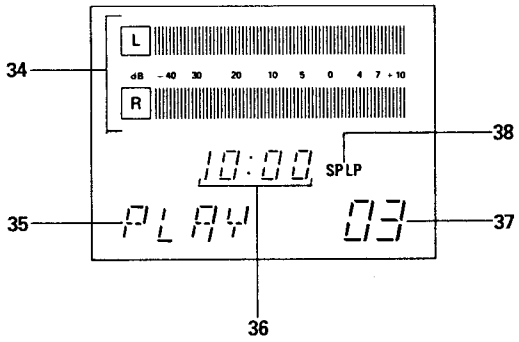
CONTROLS AND FUNCTIONS

Refer to the instruction manuals of each destination for details.





1. **NICAM switch**
   AUTO: Usually set the switch to this position.
   The VTR discriminates whether the broadcast is NICAM or not automatically.
   OFF: Set the switch to this position when you do not want to receive NICAM broadcasts.
2. **Colour system select switch**
   This switch is used to select colour systems either automatically or manually.
   Set to AUTO ordinarily. Circuits are automatically switched to either PAL, SECAM or NTSC.
   If a normal picture does not appear (wrong colour system is judged due to the poor picture, picture disturbed or colour unstable, etc.) when recording or playback is performed with this switch set to AUTO, set this switch to the adequate colour system so that the normal picture may appear.
3. **Cassette compartment**
   Insert a cassette through the door, and loading will be completed automatically.
   Note: Power is turned on automatically when a cassette is loaded.
4. **SECAM/MESECAM switch**
   Use this to switch between SECAM and MESECAM if you have set the Colour system switch to SECAM.
5. **Edit switch**
   Set this switch to SOFT or NOR (normal) during playback. The EDIT position is used to empasize the outlines of the picture during tape copying from this VTR to another VTR.
6. **MIX ON/OFF switch**
   This switch changes over the sound during playback.
   ON: Plays both the VHS Hi-Fi sound and linear sound.
   OFF: Plays the VHS Hi-Fi sound or linear sound.
7. **AUDIO LEVEL controls**
   Use these controls to adjust the audio recording level. Normally set the controls to the click, "5", positions; sound can be recorded at approximately the optimum level.
8. **TAPE-IN indicator**
   Lights when cassette is loaded in the compartment.
9. **Door-open button**
   Press to open the control door.
10. **Colour mode indicators**
    Indicates the mode corresponding to the colour mode which is being recorded or played back.
11. **Shuttle ring**
    During play, turn this ring to speed up or slow down the playback speed at a smooth variable tape, for everything from slow motion to visual search. Releasing the ring restores a still picture.
12. **Jog dial**
    Every time the jog dial is turned to a click position during still play, the tape moves forward or backwards one frame at a time.
13. **Display panel**
    Clear, easy-to-read displays in this display panel includes many indicators that make operation easier.
14. **Infrared ray receiving section**
    Receives infrared rays from the remote control unit.
15. **Channel preset controls**
    These controls are used to preset available active channels.
16. **SP/LP button**
    Press to select the tape speed for recording (LP for PAL/EP for NTSC). The playback speed is automatically set to the speed used in recording.
17. **A (audio) DUB button**
    Use this button to dub new sound on a previously recorded tape.
18. **HEAD CLEANING button**
    Press this button to manually clean the video heads when the dirt cannot be removed by auto head cleaning.
19. **METER on/off button**
    Press this button to turn the audio level indicator on or off.
20. **GO-TO button**
    Used with the linear time counter, to move tape so many minutes forward or backward from the present position
21. **RETURN button**
    Press this button to bring the tape back to the position where the linear time counter reads "0:00:00".
22. **0000 button**
    Resets the linear time counter to "0:00:00" when the linear time counter reading is displayed.
23. **CLOCK/COUNTER button**
    The VTR display changes between clock and linear time counter.
24. **IRT (instant recording timer) buttons**
    This allows unattended recording. The timer will switch the VTR off automatically at a preselected time. This is convenient when you go out during recording.
25. **REC/LENGTH button**
    Press the REC/LENGTH button once to start recording. Pressing again lets you select a recording time within 4 hours. After recording for the preset time, the VTR will automatically shut off. This is convenient when you go out during recording.
26. **TV PROG (programme) buttons**
    Select the TV programmes you wish to view or record by pressing these buttons.
27. **PAUSE button**
    Press to pause during recording.
    Press to view a still picture during playback.
    Press again to release.
28. **STOP button**
    If this button is pressed, while the VTR is operating, the running of tape stops and all operating modes are cancelled (except for timer recording).
29. **F.FWD (fast forward) button**
    Press to activate fast forward.
    Press this button during playback and forward playback picture can be viewed at high speed.
30. **PLAY button**
    Press to start play.
    Note: When a cassette (with its erase prevention tab removed) is loaded, playback starts automatically.
31. **REWIND button**
    Press to start rewind.
    Press this button during playback and reverse playback picture can be viewed at high speed.
32. **EJECT button**
    Press to eject a cassette.
33. **OPERATE switch**
    Turn the system power on and off.



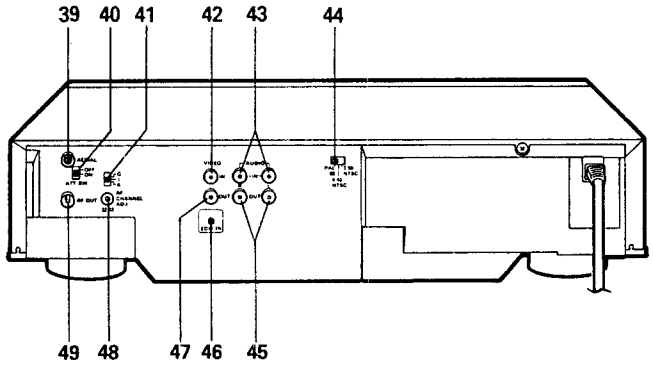
34. AUDIO LEVEL indicators
Show the recording levels of each audio channel during recording and the recorded levels during playback.

35. VTR status displays
This area of the display shows what the VTR is doing:
STOP: appears for a few seconds when the VTR enters the stop mode. STOP flashed in the stop/pause mode.
PLAY: for playback
REW: for rewind
FF: for fast forward
REV: for reverse search
CUE: for forward search
STILL: for play/pause
REC: for record, REC flashes in the record/pause mode.
SLOW: for slow speed play
A DUB: for audio dubbing, A DUB flashes in the audio dub/pause mode
TIMER: for timer standby
TRACK: for auto-tracking
GO-TO: for Go-To function
STREO: when receiving a NICAM stereo broadcast.
BILNG: when receiving a NICAM bilingual broadcast.
TUNE: for channel preset
TAPE: for warning of no cassette or cassette without tab
T-REC: for timer recording
TEST: for video channel preset
VTR-1 (or VTR-2): for remote transmitting code preset
INDEX: lights while index signal is recorded
SC: Lights when you select the SC position by pressing the AUX button. SC position is used to record the video signal from the VTR's tuner and the audio signal from the AUDIO IN (L), (R) jacks on the rear of the VTR.

36. Clock display
This displays the current time when the power is off. When power is turned on, you can switch the display between the clock and linear time counter by pressing the CLOCK/COUNTER button.

37. TV station number and AU indicator
Normally this shows the TV station number corresponding to the station selected. This display is controlled by the AUX button on the remote control; you can select additional auxiliary input; AU.
AU: The VTR records from a device connected to the VIDEO IN and AUDIO IN sockets on the VTR.

38. Tape speed indicator
Shows tape speed during recording and playback.
SP — Standard play **LP** — Long play
EP — Extra long play (for NTSC)



39. AERIAL input socket
Connect an external aerial.

40. Attenuator switch
Generally set to the OFF position.
Set to "ON" when interference occurs in an area with a strong signal.

41. G/I/K select switch
Set this switch to match your TV.

42. VIDEO IN
Receives video signals from a camera, or another VTR.

43 AUDIO IN (L), (R)
Receives audio signals from a camera, external audio equipment or from another VTR.

44. NTSC 4.43/3.58/PAL 60 MHz select switch
This switch is effective when recording and playing NTSC signal.
4.43: Set the switch to this position when recording NTSC 4.43 signal from the VIDEO IN/AUDIO IN jack or connecting the Multi-colour TV which does not have NTSC 3.58 but only 4.43.
3.58: Set the switch to this position when an NTSC 3.58 signal is input or output.
PAL 60: Set to this position when connecting this VTR to a PAL colour TV providing vertical sync adjustment circuitry (or volume) for 60 Hz.

45. AUDIO OUT (L), (R)
Permits audio connection of your unit to a monitor or another VTR.

46. EDIT IN socket
Connect a camera pause cable.

47. VIDEO OUT
Permits video connection of your unit to a monitor or another VTR.

48. RF CHANNEL control
Used to adjust the video channel correctly.

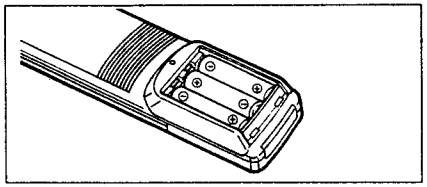
49. RF OUT socket
Connect to TV aerial input.

REMOTE OPERATION

You can operate the VTR from a distance using the Infrared Remote Control unit which performs the same functions as the corresponding buttons on the VTR.

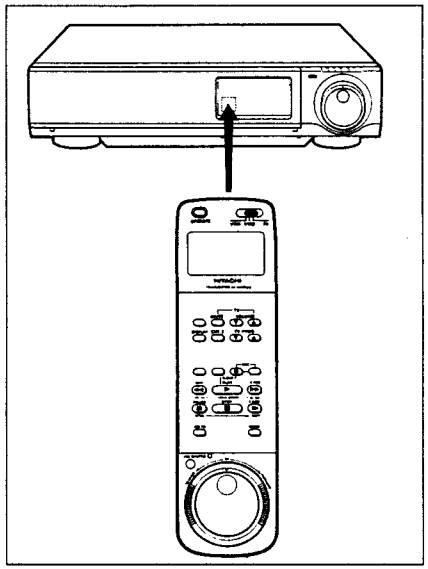
Power source of infrared remote control unit

The infrared remote control unit is powered by 3 batteries (size IEC standard R6). The life of the batteries is about a year although it depends on the number of times the unit is used. Replace the batteries when operation is not possible or when the distance becomes too small.



Remote operations

To operate the VTR with the remote control, set the VTR 1/VTR 2/TV switch on the remote control unit to the VTR 1 position, then point it at the receiver on the front of the VTR.



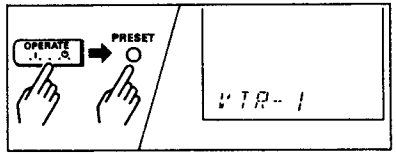
VTR 1/VTR 2/TV switch

The remote control unit provided is designed to operate two VT-F787EM units and ten different types of TV.

- Refer to page 38 when using the remote control to operate the TV.
- Follow the procedure below when operating two VTRs.

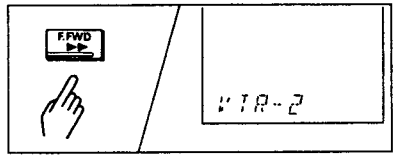
For tape dubbing, as an example, recording VTR and playback VTR can be controlled by a single remote control unit. When controlling two VTRs, operate the other VTR as the VTR 1 and this VTR as the VTR 2. However, this VTR has been preset to be controlled as the VTR 1. Therefore, take the following procedure to set this VTR so it can be controlled as the VTR 2.

1 Turn the OPERATE switch off and press the PRESET button.



"VTR-1" appears in the display.

2 Press the F.FWD button.



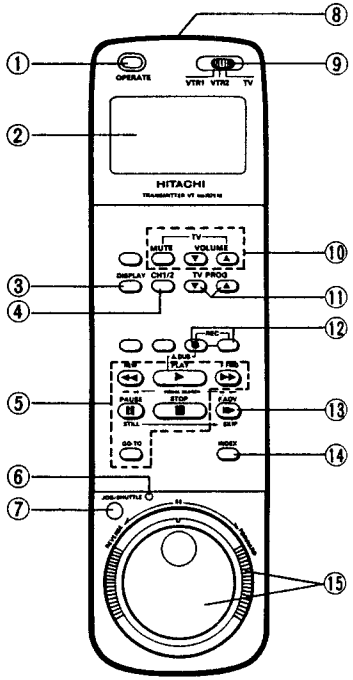
The display switches to "VTR-2".

3 Press the PRESET button again.

Now, this VTR can be remote controlled as the VTR 2.

Note: To return this VTR so it can be controlled as the VTR 1, use the above procedure again to display "VTR-1".

Controls and functions



① **OPERATE:** Same as OPERATE on the VTR (turns operate on/off).

② **Clock/timer display:** While setting the clock/timer, this display will prompt you through the procedure. After setting the clock, the display shows the clock time.

③ **DISPLAY:** Control the On-Screen Display.

④ **CH1/2:** Select the desired audio channel while playing a tape.

⑤ **PLAY/STOP/REW/F.FWD/PAUSE/GO-TO:** Same as on the VTR.

⑥ **JOG/SHUTTLE indicator:** Lights when the JOG/SHUTTLE button is pressed and its function is turned on.

⑦ **JOG/SHUTTLE:** Press this button to operate the VTR with the jog dial and shuttle ring on the remote control unit. The JOG/SHUTTLE indicator above the button is turned on and off by pressing this button.
The jog dial and shuttle ring on the remote control are activated only when the indicator is turned on.

⑧ **Transmission window:** Transmits commands to the VTR.

⑨ **VTR 1/VTR 2/TV:**
- Set to TV to control the TV.
- Select VTR 1 or VTR 2 to control two VTR units.

⑩ **TV control buttons:** Used for controlling the TV. The VTR 1/VTR 2/TV switch must be in the TV position.

⑪ **TV PROG:** Same as on the VTR.

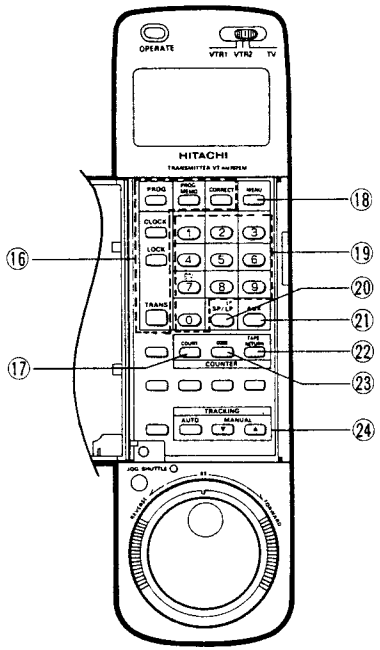
⑫ **REC:** Press both buttons to start recording.

⑬ **F.ADV/SKIP:** Advance the picture by one frame during still playback.
During normal playback, pressing this button advances the tape by 30 seconds.

⑭ **INDEX:** Used for INDEX function.

⑮ **Shuttle ring and Jog dial:** Same as those on the VTR.
The JOG/SHUTTLE indicator must be on to operate these controls.

Controls and functions



⑯ **Clock/timer programme buttons:** These buttons are used for setting the clock and programming the timer.

⑰ **COUNT:** Same as CLOCK/COUNTER on the VTR.

⑱ **MENU:** Press to review the timer programme, recall the VTR set-up menu, and select the language of the on-screen display.

⑲ **10-KEY button**
Use for setting the clock and programming the timer.

⑳ **SP/LP:** Same as on the VTR.

㉑ **AUX:** Press to turn the SC (simulcast) or AU (auxiliary) indicator on and off in the VTR display panel. Turn these indicator off for normal recording from the VTR's built-in tuner.
SC: Turn the SC indicator on to record video from the VTR's built-in tuner and audio from a device connected to the AUDIO IN sockets on the back of the VTR.
AU: Turn the AU indicator on to record both video and audio from a device connected to the AUDIO IN and VIDEO IN socket on the back of the VTR.

㉒ **TAPE RETURN:** Press this button to bring the tape back to the position where the linear time counter reads "0:00:00".

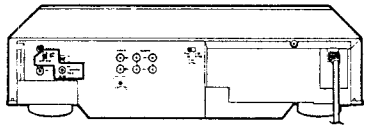
㉓ **0000:** Resets the linear time counter to "0:00:00".

㉔ **TRACKING:** The VTR has an automatic tracking feature that will adjust the tracking whenever you insert a tape or press the PLAY button.
The tracking can also be adjusted manually by pressing the MANUAL TRACKING buttons. The automatic tracking feature is turned off whenever you press the MANUAL TRACKING buttons.
Press the AUTO TRACKING button to turn the automatic tracking feature back on after you have adjusted the tracking manually.

Note: The infrared rays will bounce off the walls and eventually reach the receiver on the VTR, but for best results transmit the rays directly to the receiver

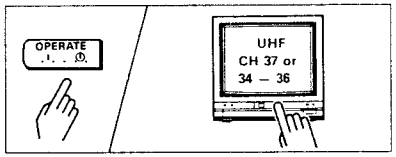
VIDEO CHANNEL SETTING

The RF converter changes the video and audio signals played back from the video tape to the same type of signals used for TV broadcasts. The RF converter output of this unit is set to UHF channel 37 for PAL/SECAM system TV receivers (UHF channel 34 — 36 for NTSC system TV receivers) prior to shipment. If this channel is employed for broadcasting, the converter channel must be reset to a vacant channel between CH32 — CH42 for PAL/SECAM systems (CH29 — CH42 for NTSC system).

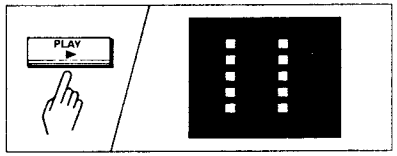


User's controls

1 Turn on VTR and TV, then set TV to UHF channel 37 for the PAL/SECAM systems (channel 34 — 36 for the NTSC system).
If this channel is employed for broadcasting, select a vacant channel (CH32 — CH42 for the PAL/SECAM systems, CH29 — CH42 for the NTSC system).



2 Press PLAY button with operate switch off.



The test pattern appears on the TV screen.
Fine tune your TV until the test pattern is received clearly.
Now the video channel has been preset.

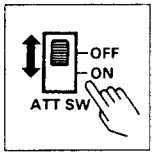
You must always select this channel with the channel selector of your TV when playing back a tape or viewing a TV programme selected with the TV PROG button of the VTR.

NOTE:
If it is not possible to correctly tune to the test pattern, adjust the RF converter output with the RF channel control using a small screwdriver and readjust your TV until the test pattern is observed.

When connecting the VTR to a TV set provided with auto-tuning and the video channel cannot be set, operate as follows:

1. Remove the aerial cable from the AERIAL terminal of the VTR.
2. Press PLAY button with operate switch off.
3. Press the Auto-tuning button of the TV.
4. Auto-tuning starts and it stops at UHF video channel.
   The test pattern appears on the TV screen.
   Note: The auto-tuning indicator of the TV set changes to an exact tuning indicator.
5. Set the channel memory of the TV to ON and store the channel which was set in item 4.
   Now, the video channel of the TV has been set properly.
6. Reconnect the aerial cable to the VTR.

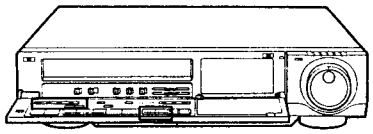
ATTENUATOR SWITCH



The attenuator switch located on the rear panel of the VTR is used to adjust the reception of the antenna signal.
If the wavy lines appear in the picture during the reception of a broadcast from a near-by TV station, it may be that the signal level is too high.
In this case, set this switch to ON to attenuate the signal level.
Normally leave this switch in the OFF position.

PRE-TUNING OF BUILT-IN TV TUNER

This VTR incorporates a complete television tuner with the required tuning controls. Once you have pre-tuned to preferred stations, you can select any of them by merely pressing the TV PROGRAMME button.

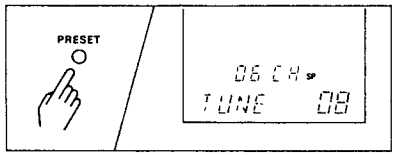


User's controls

Auto tuning

1 Turn on the Operate switches of the VTR and the TV, then set the TV to the pre-tuned video channel.

2 Press the PRESET button once.



The VTR's display changes to the channel preset display.

The TV screen shows the channel pre-tuning display.

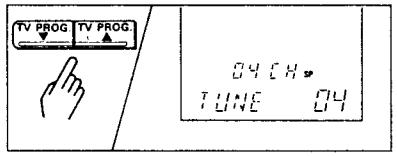
- Press the F.FWD button to select the broadcasting system. The display changes in the order (PAL) → (JAPAN) → (USA) each time the button is pressed.

  (PAL): for pre-tuning to a PAL broadcast
  (JAPAN): for pre-tuning to a Japanese (NTSC) broadcast
  (USA): for pre-tuning to an American or Canadian (NTSC) broadcast
- When the (PAL) display is selected, press the RE-WIND button to select the colour system display (I or GK).

  (I): for I-PAL
  (GK): for GK-PAL
- When the (USA) display is selected, press the RE-WIND button to select the antenna system (ANT, CATV1 or CATV2).

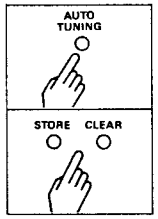
  (ANT): for pre-tuning the broadcast coming from a home antenna system
  (CATV1): for pre-tuning cable TV system in U.S.A.
  (CATV2): for pre-tuning cable TV system in Canada

3 Press the TV PROG button to select the desired channel number (01 through 69).



The above shows that CH04 has been selected.

4 Press the AUTO TUNING button.
The VTR will start searching a station. When a station that is broadcasting is reached, the picture appears on the TV screen for approx. 10 seconds. During this time, press the STORE or CLEAR button.



- If the picture displayed is from a required station, press the STORE button to store it in memory. The programme number will change to next higher number automatically and the VTR will start searching for the next station.
- If the picture displayed is not from a station to be preset, press the CLEAR button. The VTR will start searching the next station.

Continue this until the VTR stops cycling (until the graphic "TUNE" disappears from the display).

5 The channel number stops changing in the VTR's display panel when the VTR has finished auto tuning.

Now, you can use the TV PROG buttons to see what channels are in memory.

Programme selection

The programme up and down controls on the VTR let you advance directly to the next higher or lower programmed station.

With auto tuning, the VTR will automatically cycle through all channel numbers and store them in memory without the above STORE/CLEAR operation. However, occasionally auto tuning may store a vacant channel in memory if there happened to be some of noise or a stray signal on the channel when the tuner was programmed. Auto Tuning may also miss an active channel because the signal is very weak or because the channel happened to be "off the air" when the tuner was programmed. In these cases, use following procedures.

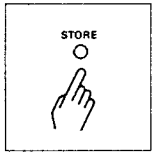
Manual tuning

You can preset the TV station in the desired channel number by this method.

1 Perform steps 1 and 3 above.

2 Press and release the TUNING SEARCH button (+ or −) to start tuning.
At a station that is broadcasting, the picture appears on the TV screen. If the programme displayed is different from the station to be preset, press the TUNING SEARCH button again.
- Pressing the button + scans from the lowest to highest frequency; the colon (:) appears when scanning CATV stations.
  Pressing the button − scans in the reverse order.

3 Press the STORE button when the desired station is reached.
"− −" will be displayed.



Note: If the TV programme of broadcast by a preset station does not appear clearly, press the TUNING SEARCH button (− or +) to fine tune the station.
After fine tuning is completed, press the STORE button again.

4 Press the TV PROG button to select the next channel number to be memorized.

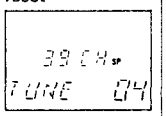
5 Follow the same steps as explained in steps 2 and 3 above for other stations.
You can preset up to 69 stations in memory.

6 After having completed tuning to all required stations, press the PRESET button once again.

The stations preset in memory as shown in the above can be selected with the TV PROG buttons on the VTR.

VHF & UHF Stations Direct Preset

Press the 10-key buttons on the remote control unit instead of step 4 to preset desired VHF and UHF stations.

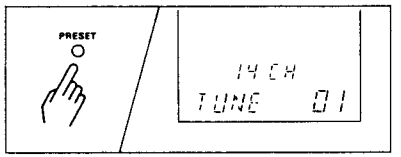


To preset UHF station 39 in the station number 04, for example, press the TV PROG button to display the station number "04" then press (3) (9) on the remote control unit and then press STORE button.

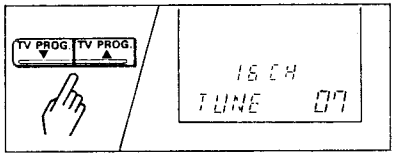
Eliminating and adding channel

You can rearrange the desired stations by eliminating unwanted preset channel for channel up/down tuning and also add them again which have previously been eliminated because they were unwanted.

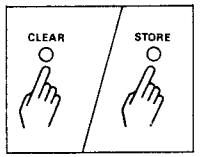
1 Press the PRESET button once.



2 Press the TV PROG button until the channel which is unwanted or was eliminated previously and you intend to preset again.



3 Press the CLEAR button to clear or STORE button to add the channel.



- The flashing channel number shows that it has been eliminated from memory.
- When the channel number stops flashing, it shows that it has been added in memory.

4 Repeat the above steps for another channels, if needed.

5 To end, press the PRESET button.

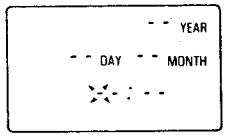
SETTING THE CLOCK

To set the clock of the VTR, first set the clock in the remote control, and then transfer the set time to the VTR.

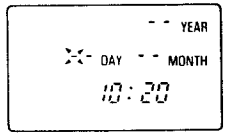
Things to know before starting

- The clock uses the 24-hour system.
- When you first plug in your VTR, the clock will read "–:––".
- The buttons for setting the clock are on the remote control unit.
- Set the VTR 1/VTR 2/TV select switch to VTR 1 for setting the clock.
- While you are setting the clock, the display panel on the remote control unit will prompt you through the procedure.
- The OPERATE switch of the VTR may be on or off for setting clock.
- The clock must be set to the correct time before programming the timer for unattended recording or using the Instant Recording Timer (IRT) feature.
- If power is interrupted for more than 30 minutes, "–:––" will appear on the display and clock will need to be reset.
- Always press "0" **before** a single-digit hour, minute, day, month and year.
- If you press the wrong digit during clock setting, press the CORRECT button repeatedly until the incorrect digit flashes then enter the correct digit.
- You have about one minute to do each step in the procedure. If you do not proceed to the next step within this time, all entries are erased and you must start over.

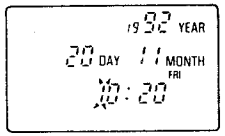
1. Press CLOCK button.



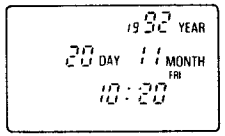
2. Set the clock.
   For example, press 1 0 2 0 for 10:20.

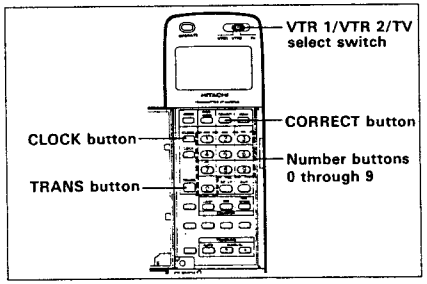


3. Set the date.
   For example, press 2 0 1 1 9 2 for the 20th of November, 1992.
   The day of week appears automatically.

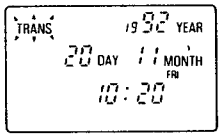


4. After setting the date, press CLOCK button.
   The flashing cursor disappears from the display panel and the clock starts counting.

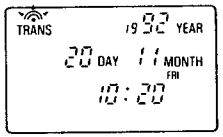




5. Press CLOCK button once more.
   The year appears along with "TRANS" blinking.



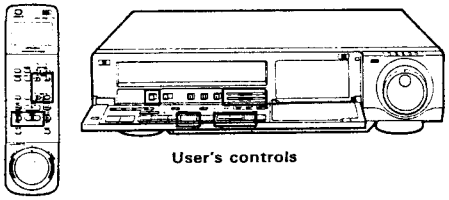
6. Press TRANS button while aiming the remote control unit at the receiver on the VTR.



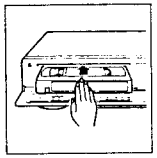
- The transferred clock appears on the display of VTR.

Note: To correct the clock time in the VTR, first correct the clock in the remote control, and then transfer it to the VTR.

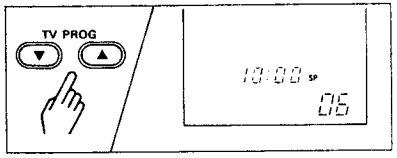
RECORDING TV PROGRAMMES



1 Insert a cassette.
Note: Be sure to check that the erase prevention tab is not missing. If it is removed, the VTR is set to playback mode automatically.

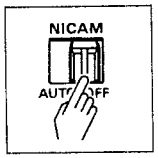


2 Select the programme to be recorded by pressing the TV PROG buttons.

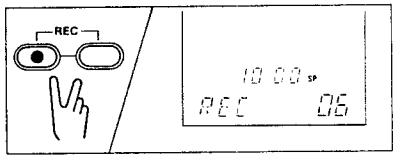


3 Set the AUDIO LEVEL controls to the click, "5", positions.
To manually control the recording level, see "Recording level adjustment" on the next page.

4 Set the NICAM switch to AUTO. (See the table on next page.)



5 Press the REC buttons.

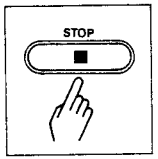


Now, recording starts.

Notes:

- If a cassette without its erase prevention tab is loaded and the REC buttons are pressed, the cassette is ejected automatically and an alarm display appears on the TV screen.
- 5 minutes before the timer recording start time in the record mode, the programmed information for the timer recording is displayed on the TV screen for several seconds (this is the same in the play and rewind modes, etc.).

6 After the recording has been made, press the STOP button.



To view a programme while recording it

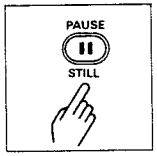
You can view a programme while recording it by merely selecting the video channel with your TV.

To record one programme while viewing another

You can record one programme while viewing another by merely selecting the programme you want to view on your TV. The recorded programme can be viewed later at your convenience.

Notes:

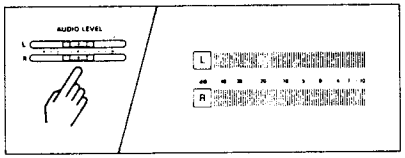
1. If you want to avoid recording unwanted material, press the STILL/PAUSE button. Press the STILL/PAUSE button again to release the pause mode. To prevent damage to tapes, the VTR will automatically switch from record/pause to the stop mode after about 5 minutes.
2. If you want to change programmes while in the record mode, press the STILL/PAUSE button then select the desired programme.
   Press the STILL/PAUSE button to release the pause mode.
3. If the cassette in the VTR has its safety tab removed, the VTR will eject it when the REC button is pressed.
4. Your TV does not have to be on to make a recording because the VTR records TV programmes without the aid of your TV. It is only used for monitoring.



Recording level adjustment

When recording is performed with the AUDIO LEVEL controls set to the click, "5", positions, the sound is automatically recorded at the optimum level.

However, when recording sound from audio equipment, Hi-Fi sound may be more faithfully recorded and played back by manually adjusting the recording level.



To adjust the Hi-Fi audio recording level, adjust the AUDIO LEVEL control so that the +4 dB segments light occasionally, when especially loud portions are being recorded.

Notes:

- The recording level of the normal sound track is always set automatically.
- Pressing the METER on/off button on the VTR turns the audio level indicator on and off.

Recording broadcast stereo TV

The basic procedure for recording broadcast stereo TV is the same as it is for normall off-the-air recording.

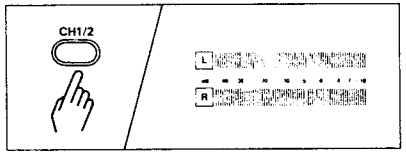
The STREO (stereo) indicator will appear in the VTR's display if the station is broadcasting in stereo.

Recording bilingual broadcast

The basic procedure for recording a bilingual programme is the same as it is for normal off-the-air recording.

The BILNG (bilingual) indicator will appear in the VTR's display if the station is broadcasting a bilingual programme.

Note: You can monitor the desired audio channel with the CH1/2 select button on the remote control unit. Press the CH1/2 select button untill you hear the desired audio channel. The selected audio channel is displayed on the VTR. During bilingual broadcasts [L] is the main language and [R] is the foreign language.



Audio to be recorded according to the type of broadcast

Type of broadcasting audio	Position of NICAM switch	Audio to be recorded		
		Linear audio track	Hi-Fi audio track	
			L	R
Standard	Either	Standard	Standard	Standard
Standard + NICAM mono	AUTO	Standard	NICAM mono	NICAM mono
	OFF	Standard	Standard	Standard
Standard + NICAM stereo	AUTO	Standard	NICAM L	NICAM R
	OFF	Standard	Standard	Standard
Standard + NICAM bilingual	AUTO	Standard	NICAM main	NICAM sub
	OFF	Standard	Standard	Standard

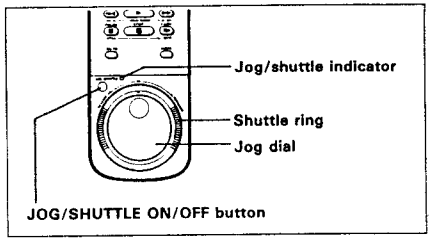
PLAYBACK USING JOG/SHUTTLE

Use of jog/shuttle allows many different kinds of playback; still play, slow-motion play, normal play, double-speed play, triple-speed play, forward search, reverse slow-motion, reverse play, reverse double-speed play, reverse-triple-speed play and reverse search.

- To go back to normal play, just press PLAY button.

Press the JOG/SHUTTLE on/off button to make the jog/shuttle indicator light while the tape is being played back. The VTR enters still playback mode automatically.

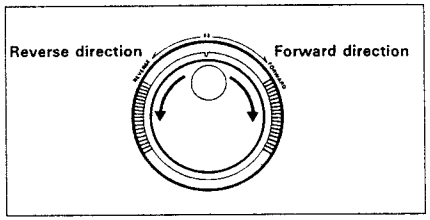
- When the indicator is off, you cannot use the jog/shuttle on the remote control.



■ How to use the jog dial

Turn the jog dial during still play for forward or reverse frame advance.

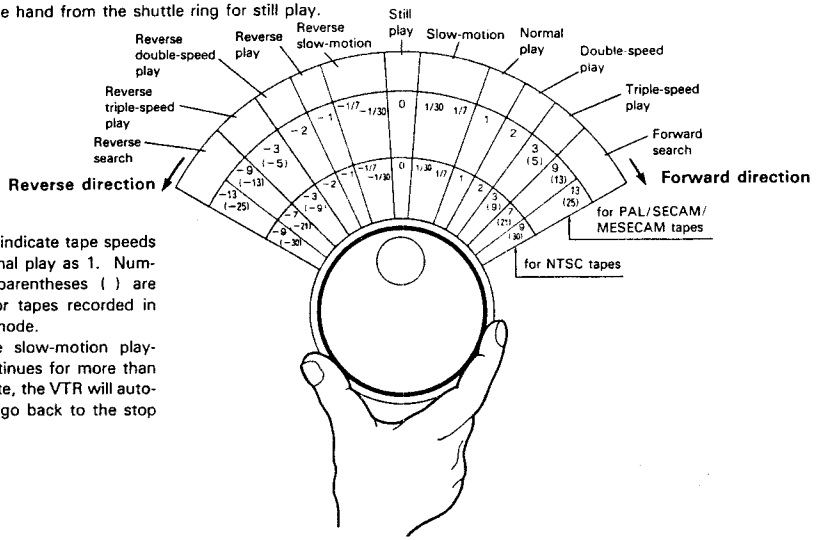
- Every time the jog dial is brought to where a slight click is felt, the picture moves one frame.
- Release the hand for still play.



■ How to use the shuttle ring

If the shuttle ring is turned during still play, turning the ring to the positions indicated gives those special effects.

- Release the hand from the shuttle ring for still play.



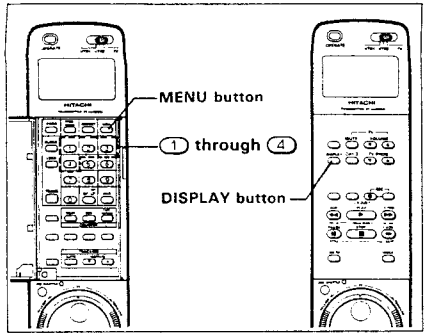
- Numbers indicate tape speeds with normal play as 1. Numbers in parentheses ( ) are speeds for tapes recorded in LP (EP) mode.
- If reverse slow-motion playback continues for more than one minute, the VTR will automatically go back to the stop mode.

NOTES:

- The picture may have noise, streaking or other distortion when it changes.
- *If noise bars appear on TV screen during slow/reverse slow/still mode, first set the VTR to slow mode and then* press TRACKING control button (▼ or ▲) to minimize noise bars. Now the noise bars in still mode are eliminated automatically. After adjusting the tracking during slow mode, set the VTR to reverse slow mode and then press TRACKING control button (▼ or ▲) to minimize noise bars.
- When you use the jog dial/shuttle ring on the remote control to perform trick play, press the JOG/SHUTTLE ON/OFF button to turn the jog/shuttle indicator off. The mode will be maintained without your having to hold the jog dial/shuttle ring.

ON SCREEN DISPLAY

Pressing the MENU button will display various screens on the TV screen.



1. Turn on the operate switches of the VTR and the TV, then set the TV to the pre-tuned video channel.
2. Point the remote control at the receiver on the front of the VTR.
3. Press MENU button. The "menu", as illustrated, will appear on the TV screen.

Press one of ① – ③ to select the required display.

■ Checking (reviewing) the programme information

- Press ①. The TV screen will display for 1 minute the information you entered for the lowest programme number.

- Press ① again if you want to view the next programme information.
  Pressing ⓪ will clear the programme.
- Press the MENU button to return to the original picture.

■ Video mode setting

You can change the VTR mode as required.

- Press ②. The "menu" as illustrated, will appear on TV screen.
  Press ① through ④ to select the required function.

① OSD [ON] or [OFF]

Press ① to change →

[ON]: Whenever you change the mode, the new mode is automatically displayed on the TV screen for a few seconds.

Note: If the DISPLAY button is pressed with the OSD ON, the following are obtained.
1st Press ..... Calls up the mode display on TV screen.
2nd Press (before display disappears) ..... The display disappears except for the Linear Time Counter and Date/Time.
3rd Press ..... Clears the display.

[OFF]: The OSD will be switched off and nothing will be displayed on the TV screen even when the DISPLAY button is pressed. When this is selected, no operation mode will be displayed on the TV screen if the VTR is operated. This mode is useful to prevent recording of the ON-Screen Display.

② AUTO REC ALARM [ON] or [OFF]

Press ② to change →

[ON]: When the VTR power is on 5 minutes before a timer recording is to start, an alarm display appears on the screen and the power will turn off automatically. When a cassette without its erase prevention tab is loaded, the cassette is ejected.

[OFF]: The above function does not operate.

③ BASS [OFF], [BASS 1] or [BASS 2]

Press ③ to change →

[OFF]: The bass is not emphasized.

[BASS 1] The bass sound is emphasized.

[BASS 2] The bass sound is emphasized more than [BASS 1].

Note: The bass from the AUDIO OUT jack is emphasized, but the bass from the RF OUT socket is not emphasized.

④ ENDLESS PLAY [ON] or [OFF]

Press ④ to select →

[ON]: You can play the tape from the beginning to the end repeatedly. While in the endless play, you can perform still play, frame advance and visual search operations, however, this does not mean switching off the endless play feature.
To switch off the endless play, you must select [OFF] with this display.

[OFF] The endless play feature is switched off.

■ Change of language

You can change the language displayed on the TV screen.

- Press ④. The languages are displayed on the TV screen, and then press the button ① for English or ② for Chinese to select the language.

TIMER RECORDING

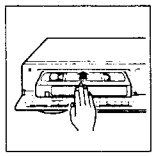
The programmable electronic clock/timer permits the unattended recording of 8 preselected programmes within a period of 1 year, including the same programme(s) repeated on every day and the same programme(s) every week. It turns the unit on and off and selects the programme automatically.

Preparations for timer recording

- Your TV does not have to be on to make a recording because the VTR records TV programmes without the aid of your TV. It is only used for monitoring.

1 Make sure that the clock shows the present time and day correctly.

2 Insert a cassette.
Be sure to check that the record safety tab is not missing. If the record safety tab is missing, recording will not begin.



3 Programme the timer.

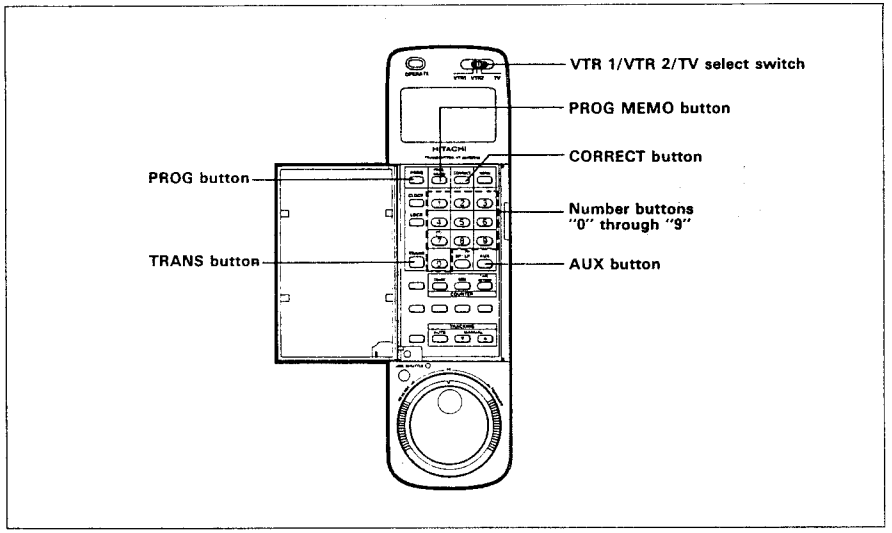
4 Turn the OPERATE switch off.
If a cassette with its safety tab snapped off is inserted, it will be ejected automatically when power is turned off. If you have turned the TV on and have selected the video channel on the TV at this time, an alarm display will also appear on the TV screen.

■ Programming the timer for unattended recording

For unattended recording the timer needs to know what **day** to make the recording, the **time to start**, the **time to stop**, and the **channel to be recorded.**

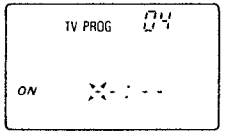
Things to know before starting

- Set the VTR 1/VTR 2/TV select switch to VTR 1 for programming the timer.
- The OPERATE switch on the VTR may be on or off for programming the timer.
- Always press "0" before a single-digit channel, hour minute etc.
- You have about one minute to do each step in the procedure. If you do not proceed to the next step within this time, all entries are erased and you must start over.
- While you are programming the timer, the display panel on the remote control unit will prompt you through the procedures.
- You can correct an error in the programme any time before the last step by pressing CORRECT button repeatedly until the digit to be corrected becomes flashing and then enter the correct digit.



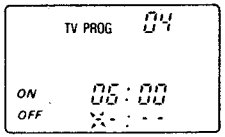
1 Press PROG button.

2 Select the TV station number to be recorded.
For example, press 0 4 for the TV station 4.

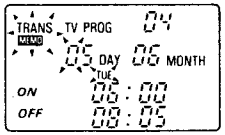


Note: To make a timer recording from the VTR's AUDIO IN and VIDEO IN sockets, press the AUX button until the letter "AU" appears instead of the channel number.

3 Select the start time.
For example, press 0 6 0 0 for 6:00.

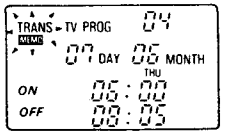


4 Select the stop time.
For example, press 0 8 0 5 for 8:05.

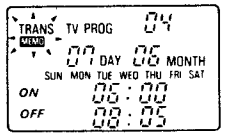


5 Select date for recording.

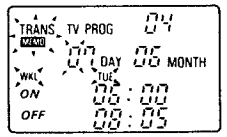
- To record on a single day up to one year ahead:
  For example, press 0 7 0 6 to begin recording on the 7th of June.



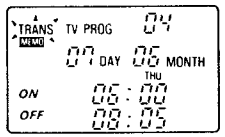
- To record at the same time every day of week:
  Press "7" (WKL/DLY) button once to display all days. Then select the first recording date.



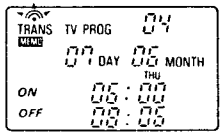
- To record on a specified day at the same time each week: Press "7" (WKL/DLY) button repeatedly until the desired day of the week you want to record appears.



6 Now, programming has been completed for one event. Press PROG MEMO button to store this programme in the memory of the remote control. See "Storing programmes in the memory of remote control" at right.



7 After programming, press TRANS button while aiming the remote control unit at the receiver on the VTR.



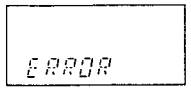
8 If you want to programme another programmes, perform steps 1 through 7.

9 Press CLOCK button to switch the display panel on the remote control unit back to the clock/calendar display.

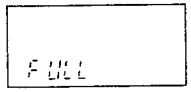
10 To activate the VTR's timer and make a recording at the preselected time, be sure to turn the system power off. Of cource a cassette which has an intact safety tab must be inserted.

Operating notes

- If you select a TV station which is not displayed if the TV PROG button on the remote control is pressed, "ERROR" is displayed by the VTR when the TRANS button is pressed. In this case, correct the channel then transfer them to VTR.
  If you turn the TV on, an error message also appears in the TV screen.



- If TRANS button is pressed when all the programme numbers that the VTR can store are occupied, a "FULL" indication will appear in the display on the VTR and the information tranferred will be rejected.

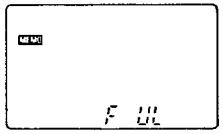


- To stop recording after recording starts, press OPERATE button and then STOP button within 10 seconds.

Storing programmes in the memory of the remote control

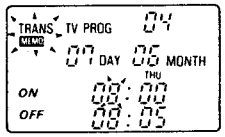
This remote control unit can store programmed information in its memory for up to 8 programmes. Press PROG MEMO button in step 6 on page 35 to store the details of the programme being displayed on the remote control in its memory. When storing the programme in memory, MEMO lights to inform you. If you store a programme in memory, you can check or correct it easily.

Note: If you attempt to store another programme after storing 8 programmes, MEMO does not appear in step 4. If PROG MEMO button is pressed at this time, the indication below appears to inform you that the memory is full.

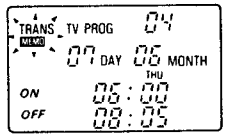


Correcting a programme in memory of the remote control unit

1. Press PROG MEMO button to display the incorrect programme.
2. Press CORRECT button repeatedly until the incorrect digit flashes.



3. Press buttons 0 – 9 to input the correct digit.
4. After the correction, press PROG MEMO button to store the programme.

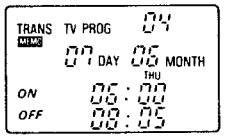


5. Press TRANS button to transfer the programme to the VTR..

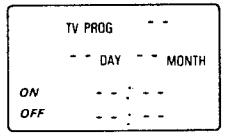
Note: The previously stored incorrect programme is re-written with the new programme. However, when the incorrect programme has already been transferred to the VTR, it is stored in the memory of the VTR. Clear the programme following "To clear a programme from the VTR's memory" on page 36.

Clearing a programme from memory of the remote control unit

1. Press PROG MEMO button when the remote control is displaying the present time to display the programme to be cleared.



2. Press 0000 button.
   The programme will be cleared.



Note: When a programme is cleared from the memory of the remote control, it is not cleared from the VTR's memory. To clear the programme from the VTR's memory, see "To clear a programme from the VTR's memory".

Programming errors

If programmes overlap, the VTR will select the programme with the earlier start time. When that programme is over, the VTR will switch to the next programme. If the start times are the same, the VTR will select the programmes in numerical order.

Note: If the display of the remote control is not correct, remove the batteries and leave the unit for about 30 seconds, then re-insert the batteries.

As the clock and timer programmes will be erased, re-set the clock and re-programme the timer.

To check programming in the memory of the VTR

1. Turn the TV and VTR on.
2. Set the TV to the video channel.
3. Press the MENU button.
   - The menu will appear on the TV screen.

4. Press (1).
   - The programme will appear.
   - Press (1) repeatedly to check all programmes.
   - Each programme is displayed for approx. one minute.

5. Press the MENU button after checking programmes.
   - The TV will return to a normal picture.
   - If the MENU button is not pressed within one minute, the TV will return to a normal picture.

To clear a programme from the VTR's memory

1. Display the programme to be cleared on the TV screen. See "To check programming in the memory of the VTR" above.
2. Press (0).
   The programme is cleared and the picture changes to that shown below.

3. If you want to clear another programme, press (1) to display the programme to be cleared and then press (0).
4. Press the MENU button when clearing is completed.
   The TV screen returns to a normal picture.
   - When the (0) button is not pressed within one minute, the TV screen returns to a normal picture.

DISASSEMBLY

1. IDENTIFICATIONS AND LOCATIONS OF CIRCUIT BOARDS

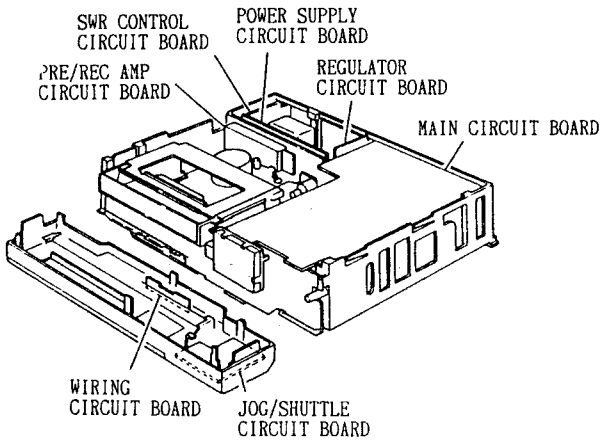


Fig. 1-1 Top View I

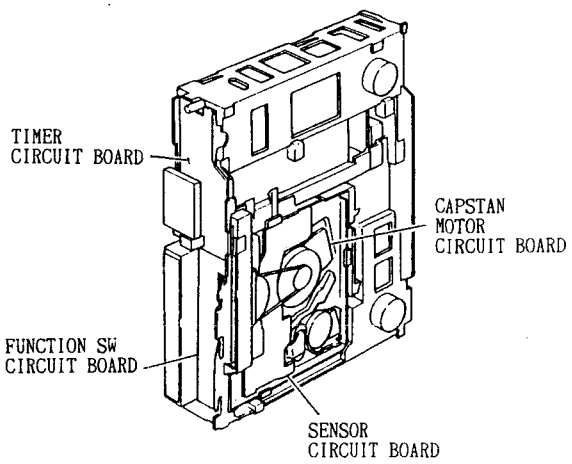


Fig. 1-3 Bottom View

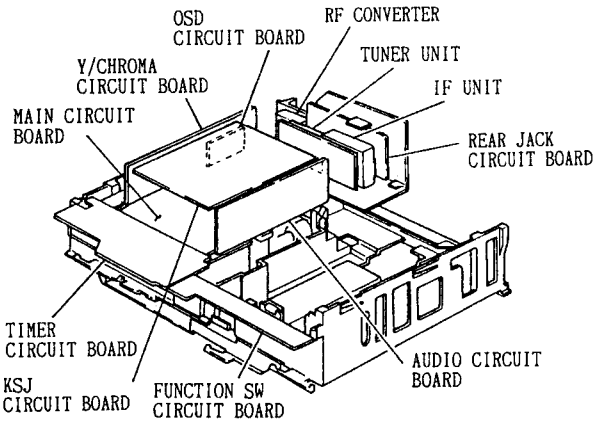
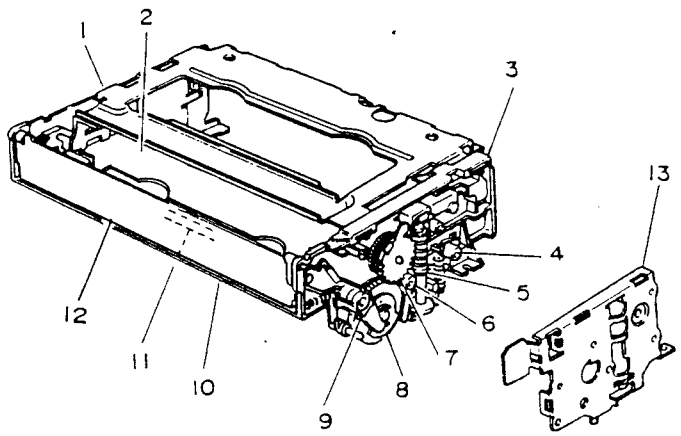


Fig. 1-2 Top View II

2. IDENTIFICATIONS AND LOCATIONS OF MAIN MECHANICAL COMPONENTS



1. CHASSIS HOLDER
2. CASSETTE HOLDER
3. GEAR BRACKET
4. SWITCH LEVER B
5. FL WORM GEAR
6. SWITCH LEVER A
7. WORM WHEEL
8. DRIVE GEAR
9. DOOR ARM
10. FRONT HOLDER
11. SHAFT PIN
12. CASSETTE DOOR
13. SIDE CHASSIS

Fig. 2-1 Cassette Loading Mechanism

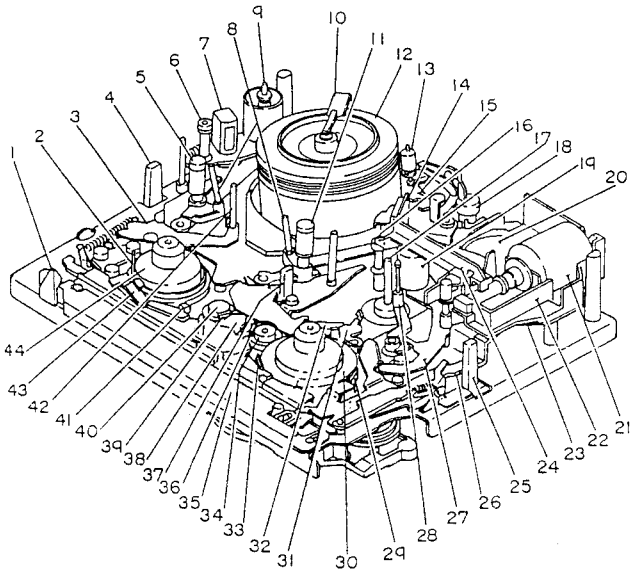


Fig. 2-2 Tape Transport Mechanism - Top View

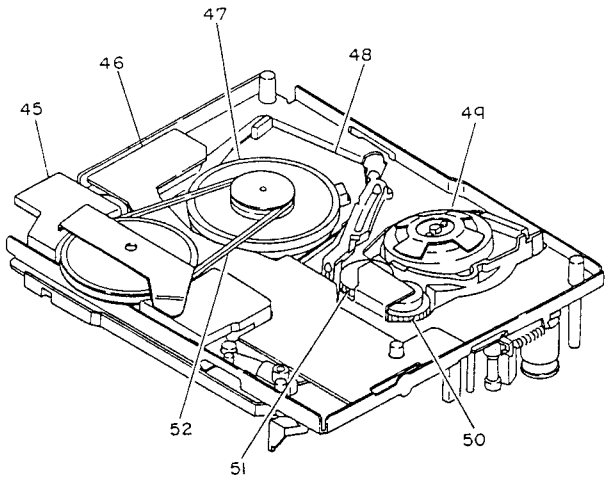


Fig. 2-3 Tape Transport Mechanism - Bottom View

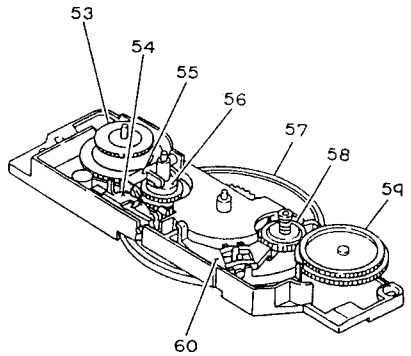


Fig. 2-4 Tape Transport Mechanism - Clutch Base Section

1. SAFETY ARM
2. TENSION BAND ASSEMBLY
3. TENSION ARM
4. SUPPLY REEL SENSOR
5. SUPPLY GUIDE ROLLER
6. SUPPLY GUIDE POLE
7. FULL ERASE HEAD
8. INCLINED GUIDES
9. IMPEDANCE ROLLER
10. STATIC DISCHARGE BRUSH
11. TAKE-UP GUIDE ROLLER
12. CYLINDER MOTOR ASSEMBLY
13. HEAD CLEANING ARM ASSEMBLY
14. AUDIO/CONTROL (A/C) HEAD
15. CYLINDER BASE
16. TAKE-UP GUIDE POLE
17. CAPSTAN SHAFT
18. HEAD CLEANING BRACKET ASSEMBLY
19. PRESSURE ROLLER ASSEMBLY
20. MECHANISM STATE SWITCH
21. LOADING MOTOR ASSEMBLY
22. LOADING MOTOR HOLDER
23. LOAD BRACKET ASSEMBLY
24. CASSETTE LID OPENER
25. TAKE-UP REEL SENSOR
26. BRAKE LINK ARM
27. PRESSURE ROLLER OPERATION ARM
28. DRAWER PIN
29. TAKE-UP TENSION BRAKE
30. TAKE-UP REEL DISK
31. REVERSE SLOW BRAKE
32. SLOW BRAKE
33. TAKE-UP MAIN BRAKE
34. TAKE-UP SUB GEAR
35. SLIDER BLOCK ASSEMBLY
36. TAKE-UP IDLER BRAKE
37. END LAMP
38. REEL DRIVE IDLER
39. SUPPLY IDLER BRAKE
40. SUPPLY SUB GEAR
41. SUPPLY MAIN BRAKE
42. TENSION POLE
43. SUPPLY SUB BRAKE
44. SUPPLY REEL DISK
45. CLUTCH GEAR ASSEMBLY
46. SENSOR P.C.B
47. CAPSTAN MOTOR
48. CAPSTAN MOTOR P.C.B
49. CYLINDER MOTOR
50. SUPPLY LOADING GEAR
51. TAKE-UP LOADING GEAR
52. REEL BELT
53. TAKE-UP GEAR
54. CLUTCH ARM
55. CHANGE ARM
56. CHANGE GEAR
57. TAKE-UP PULLEY
58. FL CHANGE GEAR
59. RELAY GEAR
60. FL CHANGE ARM

3. CASE REMOVAL

1. Top Cover
2. Bottom Cover

Note : Remove the insulators in the direction of arrow.

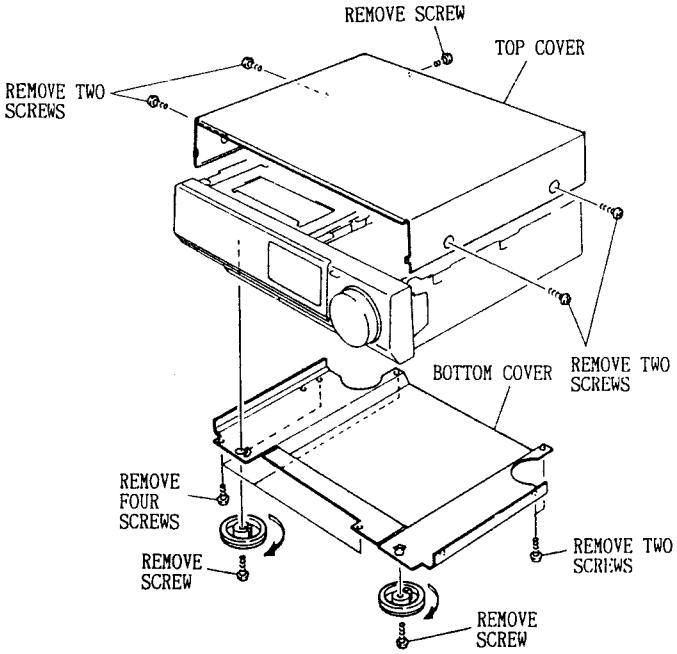


Fig. 3-1

3. Jog and Shuttle Dials
4. Front Panel

Note : Components to remove previously
· Top and bottom covers.

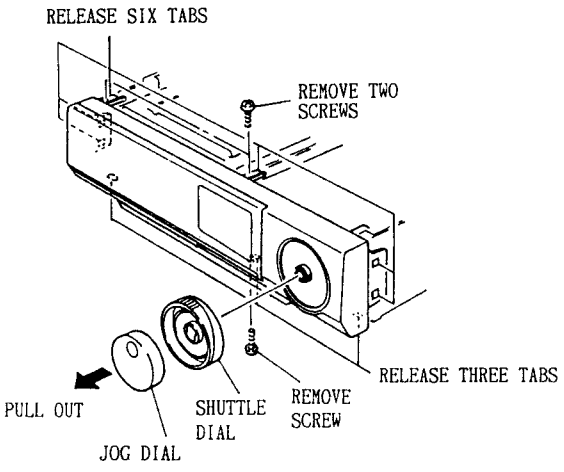


Fig. 3-2

5. Front Door and Front Metal Panel

Note : Components to remove previously
·Top and bottom covers.

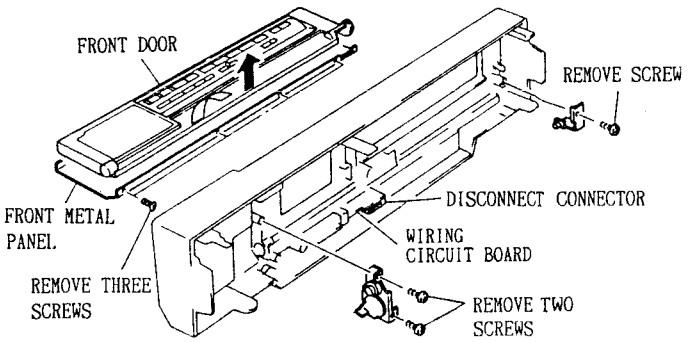


Fig. 3-3

6. Rear Panel

Note : Components to remove previously
· Top and bottom covers
· Front panel
· Timer, Function SW and Main circuit board

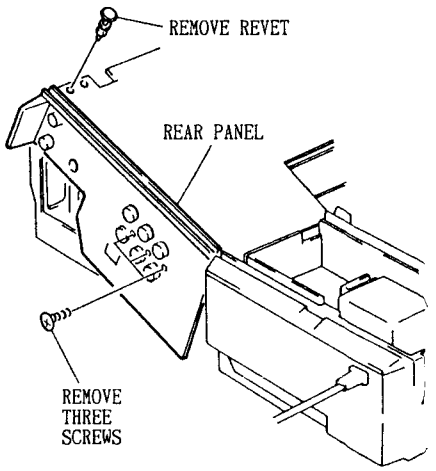


Fig. 3-4

4. CIRCUIT BOARD REMOVAL

Note : Remove the following components previously before removing the circuit boards.
- Top and bottom covers
- Front panel

1. Jog/Shuttle Circuit Board

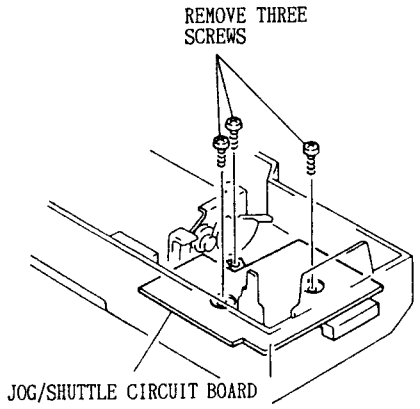


Fig. 4-1

2. Wiring Circuit Board

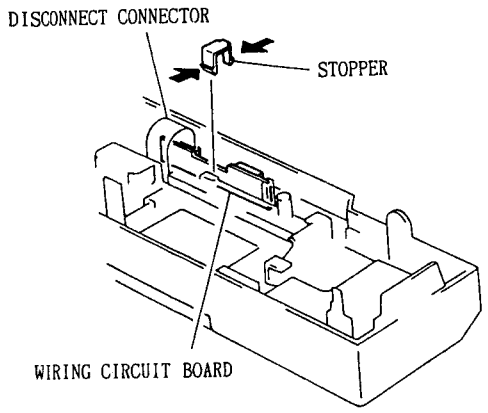


Fig. 4-2

3. Timer and Function SW Circuit Boards
☆ How to disconnect connectors between circuit boards.

a. Timer and Function SW
Set the circuit boards in the horizontal positions and pull out the function SW circuit board in the direction of aroow (A).

b. Timer and Main
Set the circuit boards in the horizontal positions and pull out the function SW circuit board in the direction of arrow (B)

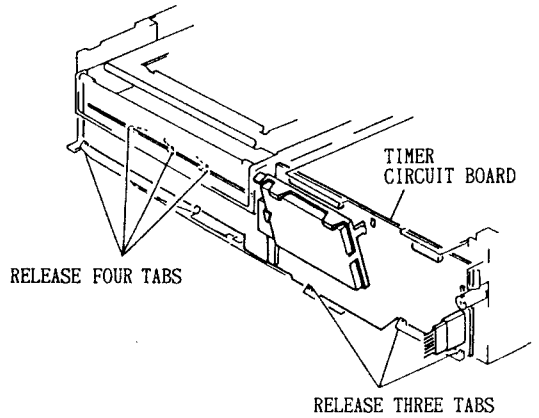


Fig. 4-3

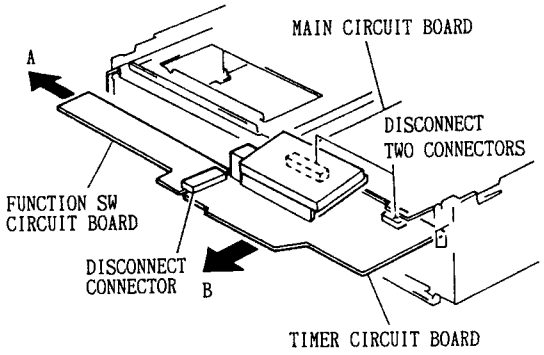


Fig. 4-4

4. Main Circuit Board

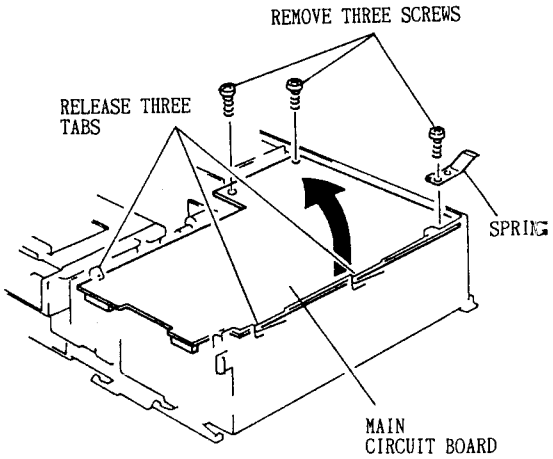


Fig. 4-5

5. KSJ Circuit Board
6. Y/Chroma Circuit Board
7. NICAM Circuit Board [For SWN, HKN]
8. Audio MPX Circuit Board [For J]

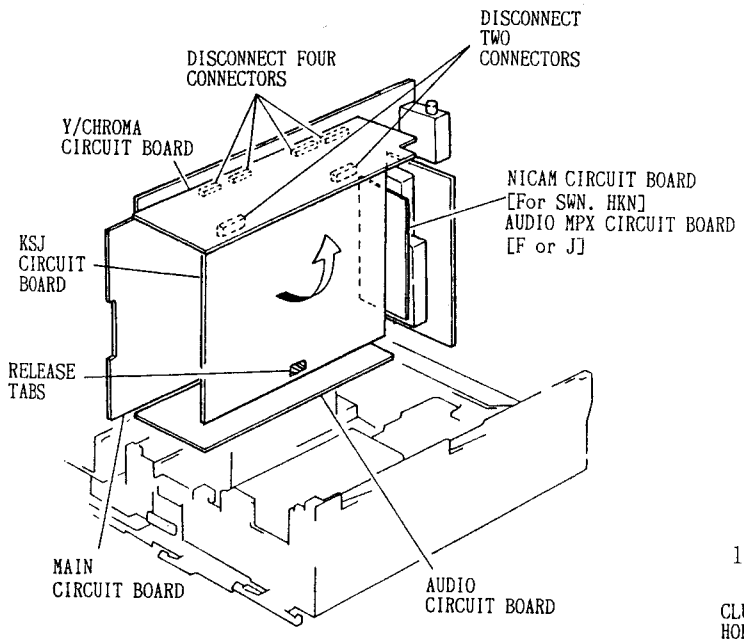


Fig. 4-6

9. Power Supply Block
Power supply, Regulator and SWR control circuit boards.
Move the entire power supply block to the main circuit board and lift the block to remove it.

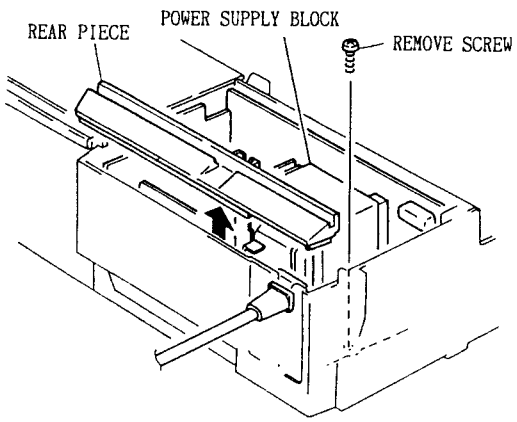


Fig. 4-7

10. Front Jack Holder

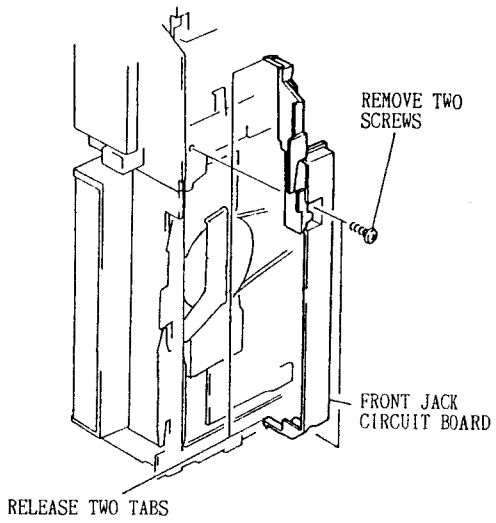


Fig. 4-8

11. Sensor Circuit Board

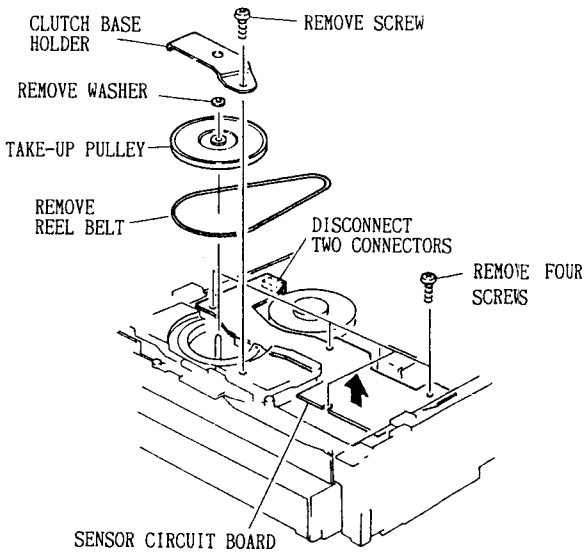


Fig. 4-9

12. Pre/Rec AMP Circuit Board

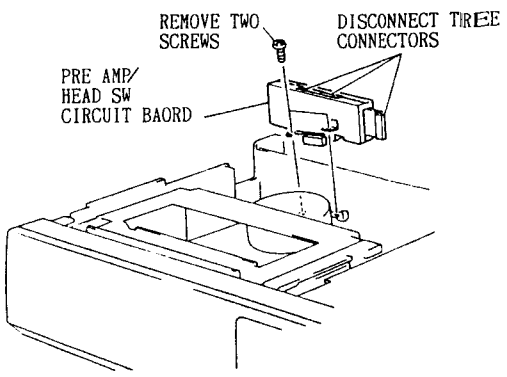


Fig. 4-10

5. CASSETTE LOADING MECHANISM REMOVAL

Note
☆ Components to remove previously.
- Top and bottom covers
- Front panel

☆ Remove the parts of the cassette loading mechanism in the order listed.

1. Cassette Loading Mechanism Assembly and Cassette Door

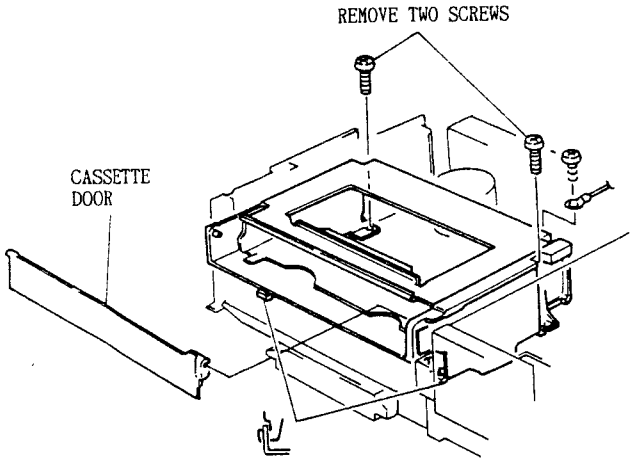


Fig. 5-1

2. Loading Gear Assembly, Chassis Holder, Cassette Holder Assembly, Front Holder

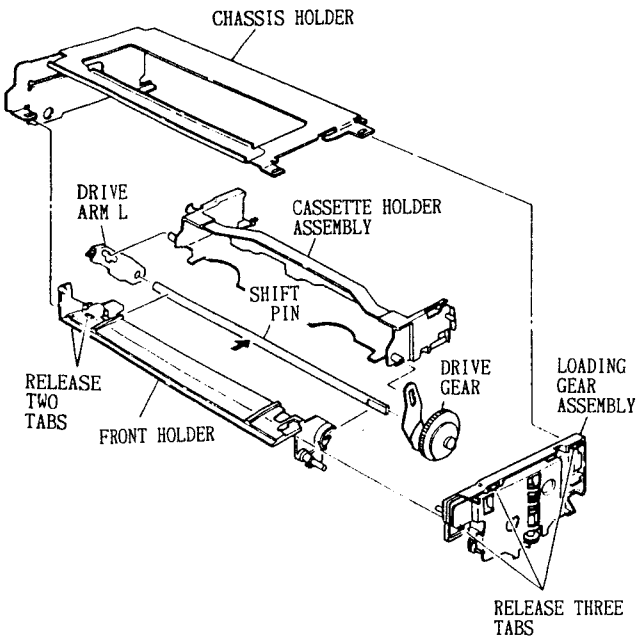


Fig. 5-2

3. Cassette Holder Base and Cassette Holder L,R

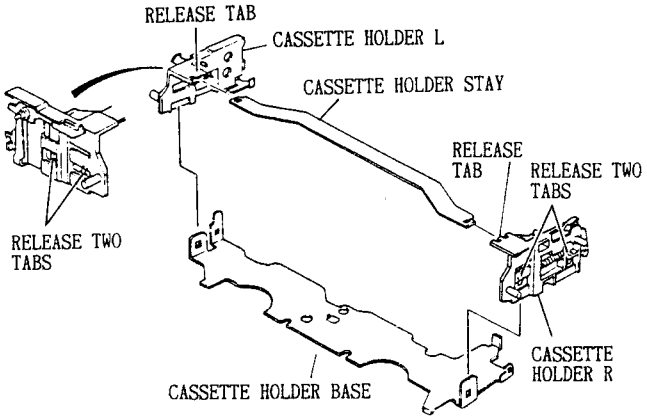


Fig. 5-3

4. Side Chassis, Door Arm, Worm Wheel, FL Worm Gear, Switch Levers A/B

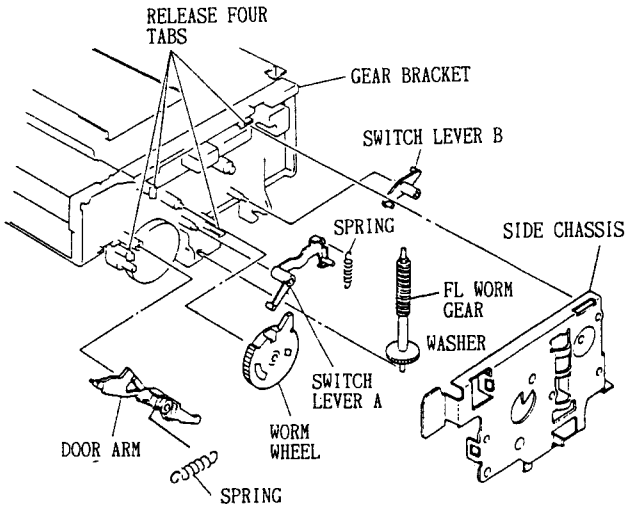


Fig. 5-4

5. Chassis Holder Reinstallation
6. Loading Gear Assembly Reinstallation

Notes
Assemble the Cassette Loading Mechanism by the reverse procedure to removal.
Care should taken in the following areas:
☆ Check that the two bosses of Cassette Holder are inserted into the grooves in the left side of the chassis holder (Fig. 5-5).
☆ When reinstalling the loading gear assembly, check that the two bosses of the Cassette Holder are inserted into the grooves (Fig. 5-6).
☆ Align the mark on the Worm Wheel Gear with the mark on the Drive Gear (Fig. 5-6).
☆ Check that the boss of the Cassette Switch Lever is set to the Cam section of the Drive Gear (Fig.5-6).
☆ When reinstalling the Cassette Door, check that the boss of the door arm is inserted into the groove in the Cassette Door (Fig. 5-6).

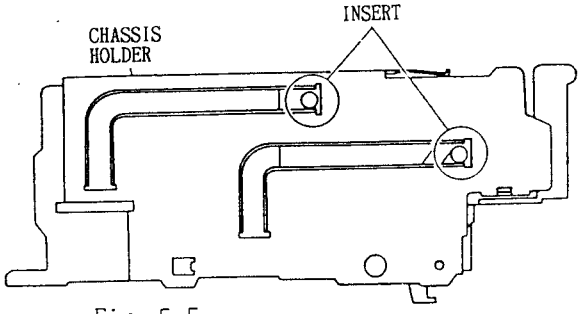


Fig. 5-5

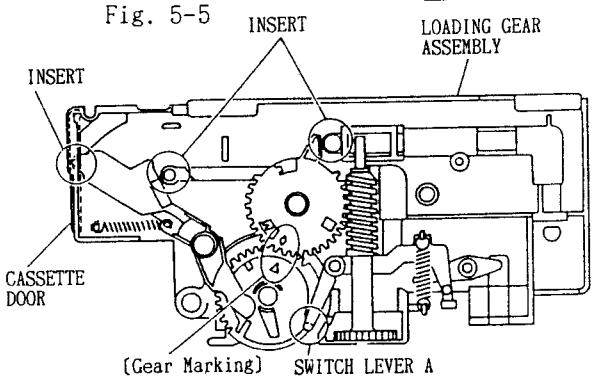


Fig. 5-6

6. MAIN MECHANICAL COMPONENTS REMOVAL

Note

☆ Componets to remove previously.
- Top and bottom covers
- Front panel

1. Cylinder Motor Assembly

Note

☆ Use extreme care when removing the upper cylinder. Do not touch the video heads during servicing.

Adjustment after reinstalling

☆ Head Switching Point
☆ Adjustment after replaceing the cylinder

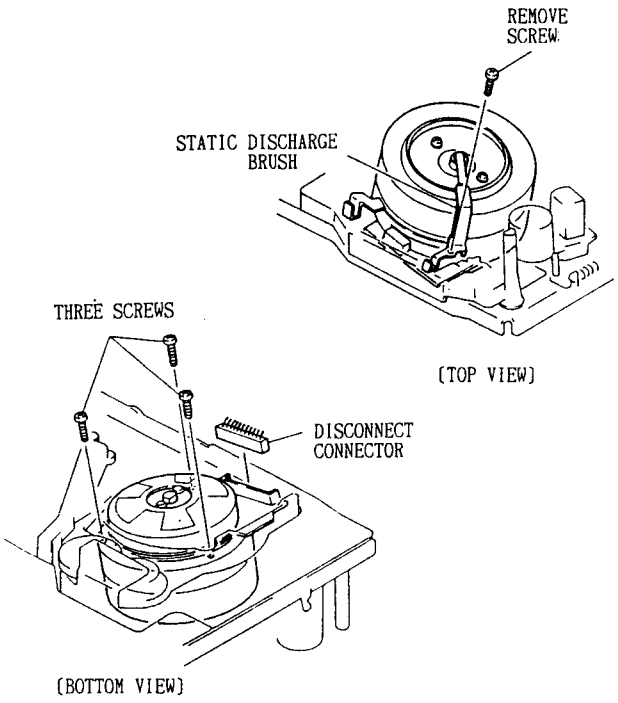


Fig. 6-1

2. FE (Full Erase) Head / Impedance Roller, A/C (Audio/Control) Head

Cautions when reinstalling the A/C Head

☆ Hook the spring between A/C head and chassis.
☆ It should be 6.3mm between head base (1) and head base (2).

Adjustment after reinstalling the FE Head/ Impedance Roller

☆ Guide Poles Height

Adjustment after reinstalling the A/C Head

☆ A/C Head
☆ X Value
☆ Audio Bias Level

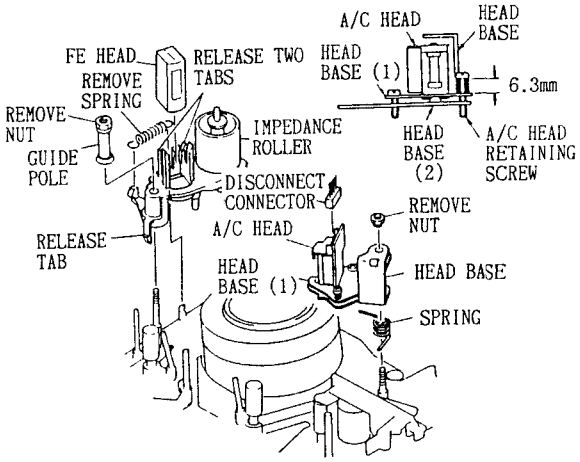


Fig. 6-2

3. Head Cleaning Arm Assembly, Head Cleaning Bracket Assembly

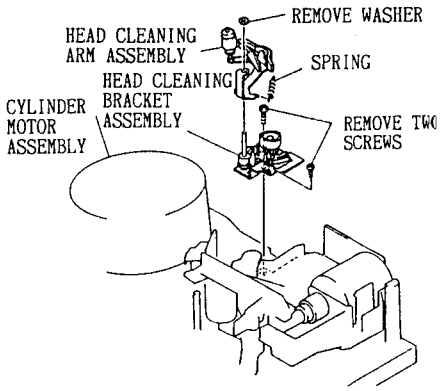


Fig. 6-3

4. Capstan Motor Assembly

Caution when reinstalling

☆ Clean the capstan shaft.

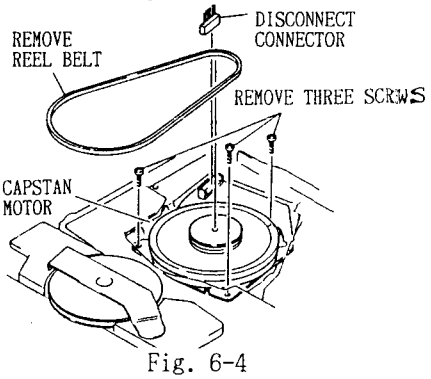


Fig. 6-4

5. Tension Arm/Tension Band

Adjustment after reinstalling

☆ Tension Arm Position

☆ Back Tension

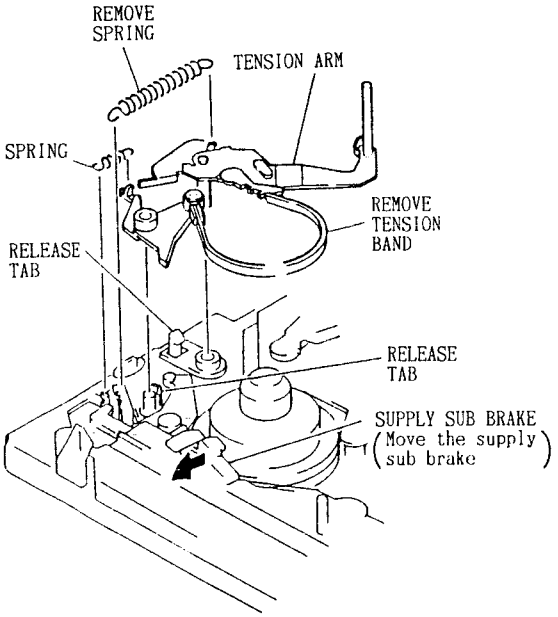


Fig. 6-5

6. Slider block Assembly, Reel Drive Idler

Caution when reinstalling

☆ Assemble main brakes and sub brakes while pushing them in the direction of arrows (A) and the pressing arrows mark (B).

☆ Check that the bosses of the load bracket are inserted into each slider.

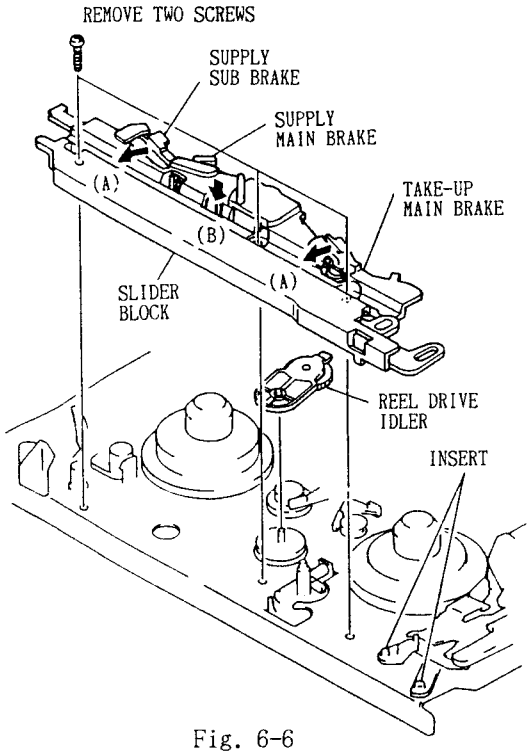


Fig. 6-6

7. Supply and Take-up Reel Disks ,Slow and Reverse Slow Brakes, Take-up and Supply Idler Brakes, Take-up and Supply Gears, Safety Arm

Adjustment after reinstalling

☆ Reel Disk Height

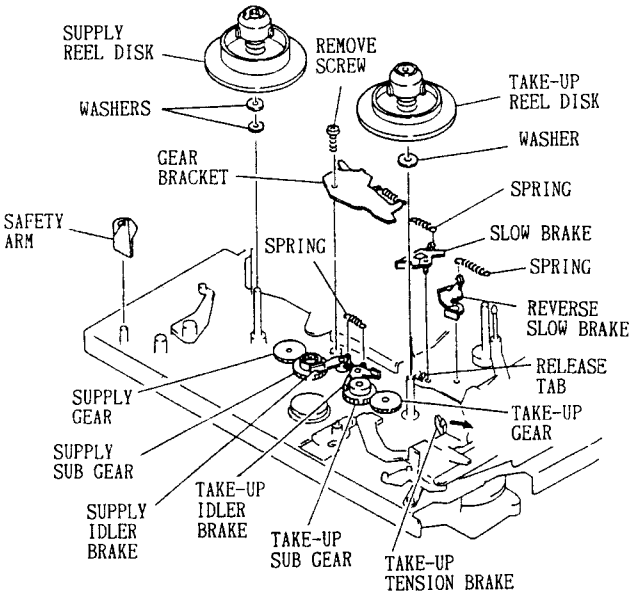


Fig. 6-7

8. Pressure Roller Assembly, Supply and Take-up Guide Poles, Supply and Take-up Guide Rollers

Adjustment after reinstallation

☆ Guide Pole Height

☆ Guide Roller Height

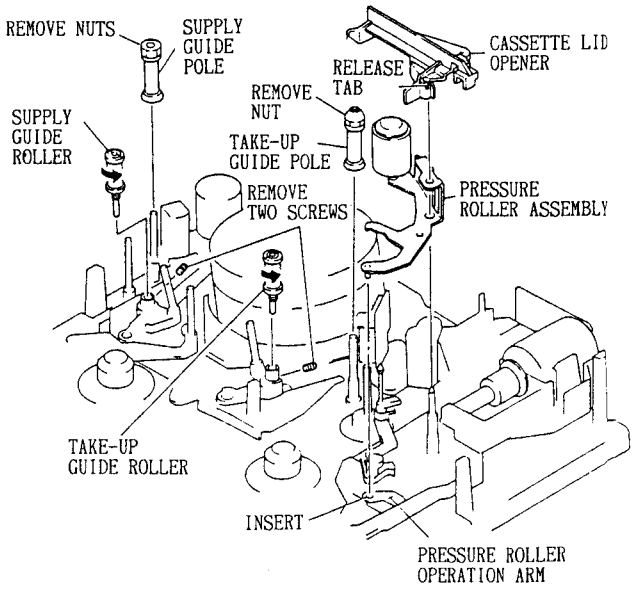


Fig. 6-8

9. Load Block Assembly, Brake Link Arm, FS Brake Arm, Latch Arm

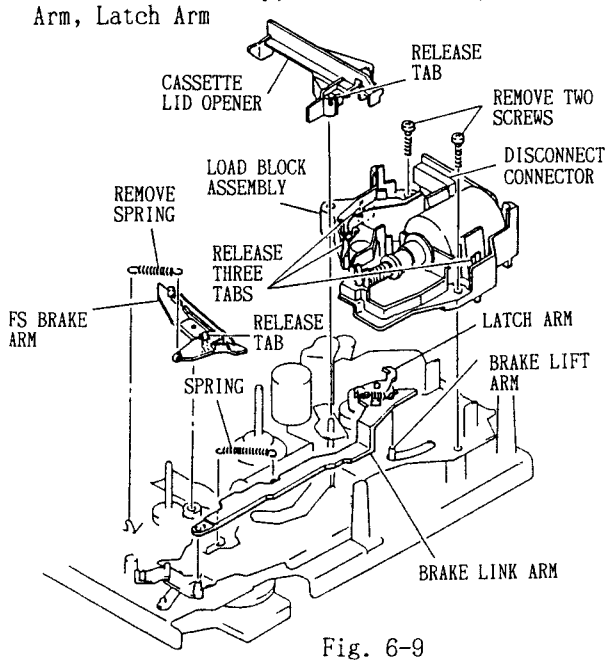


Fig. 6-9

10. Load Braket Assembly, Drawer Pin, Take-up Brake Assembly

Caution when removing

1) Remove the screw and turn the worm wheel counterclockwise to move the lift arm in the direction of the arrow until the guide poles are in the loaded positions.
2) Pull the boss of the loading slide gear out of the holder in the lift arm and lift the load bracket assembly up to remove it.

Caution when reinstallation

1) Attach the drawer pin to the load bracket assembly so the drawer spring of the load bracket assembly is not damaged.
2) After attaching the drawer pin, set the VTR to the play mode without loading a cassette (see item 9 on page 4-11). Check that the drawer pin does not lift.
3) Lift the drawer pin slightly in the EJECT mode and release it slowly. Check that the drawer pin is lowered by the drawer spring firmly and is returned to the state in which it is in close contact with the chassis.

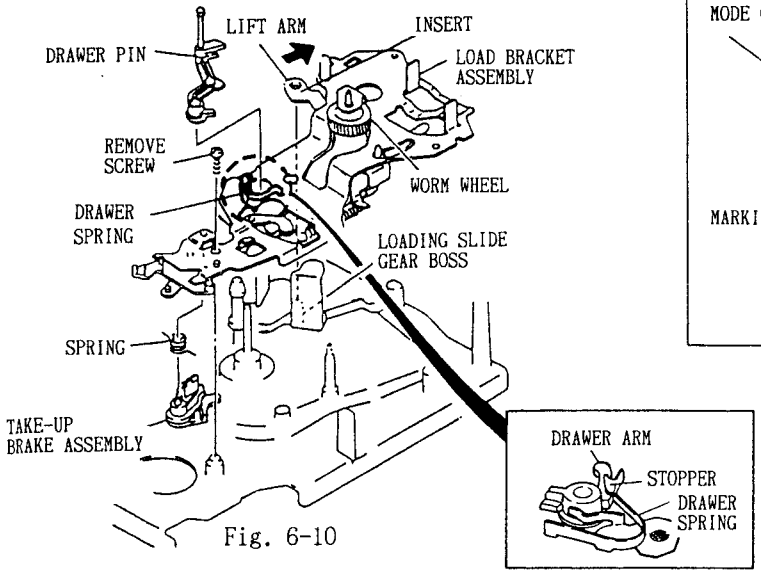


Fig. 6-10

Removal in item 11 and later is described as if the load bracket assembly has been removed

11. Brake Operation Arm, Mode Gear A, Mode Gear B, Worm Wheel, Pressure Roller Operation Arm, Mode Change Arm, Brake Lift Arm

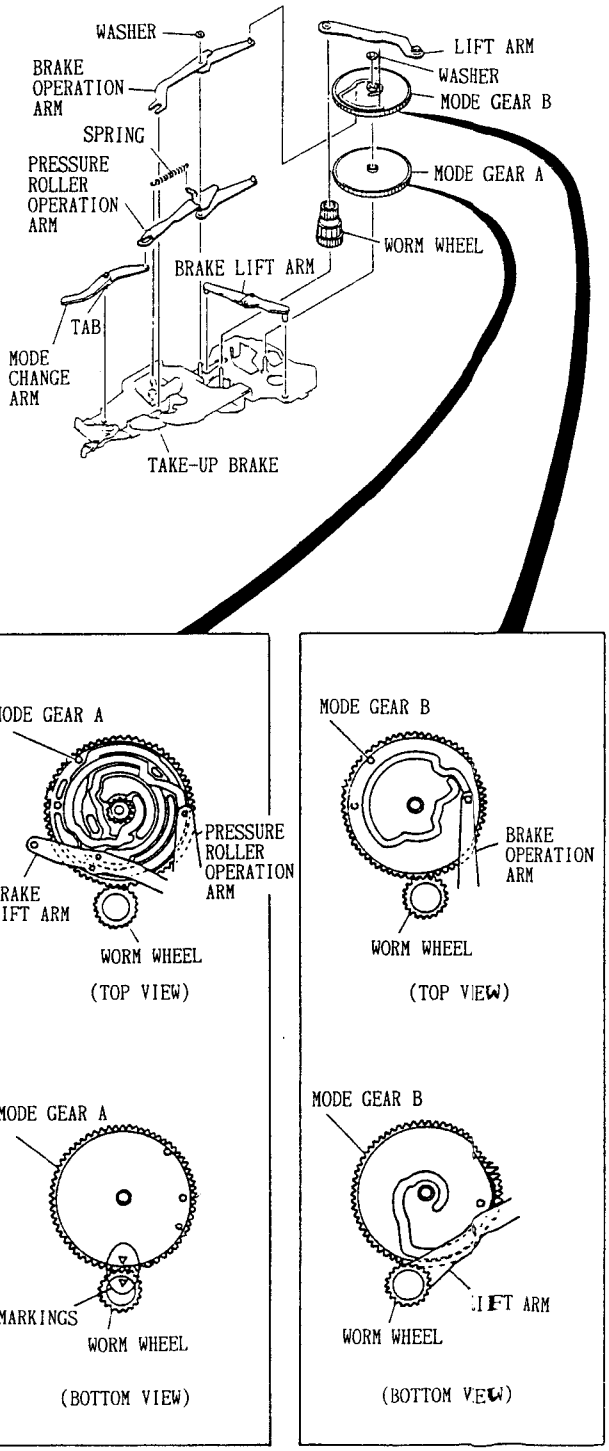


Fig. 6-11

12. Cylinder Motor Base, Supply and Take-up Loading Arms

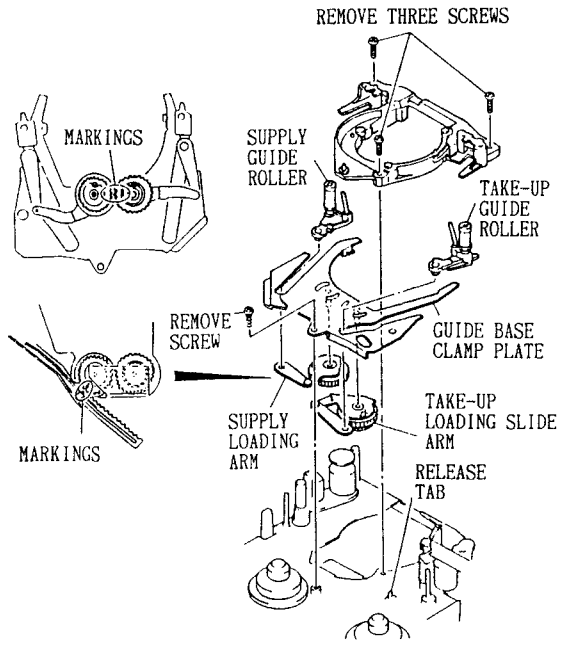


Fig. 6-12

13. Take-up Pulley and Clutch Base Assembly

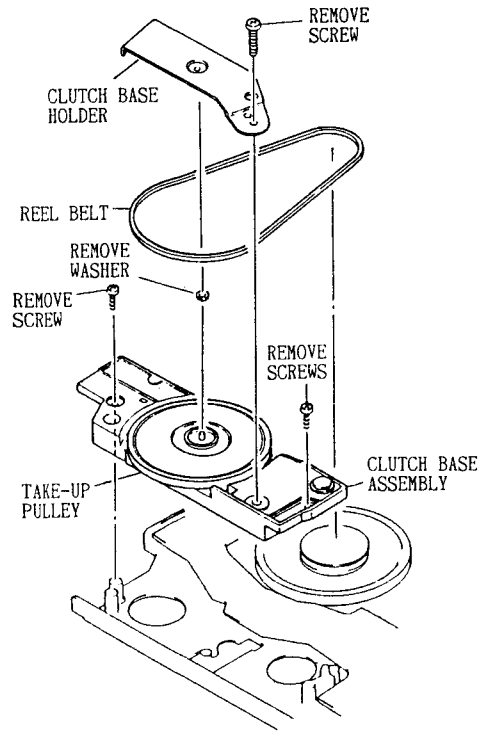


Fig. 6-13

14. Take-up Gear, Change Arm, Change Gear, Relay Gear, FL Change Gear and FL Change Lever

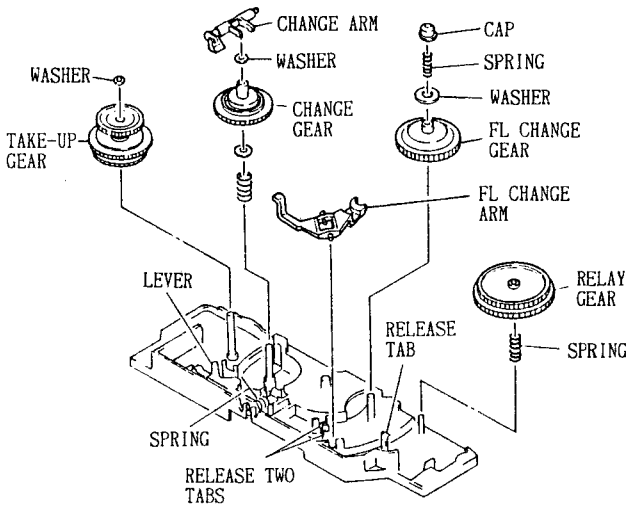


Fig. 6-14

7. ATTACHING THE ROTOR MAGNET PLATE TO THE CYLINDER MOTOR

Caution when installation

☆ The rotor magnet plate attached to the base of the cylinder motor (illustrated as the top in the figure below) is equipped with magnetic poles. If it is attached in reverse, the VTR will not operate normally. Attach it correctly following the procedure below.

How to attach

☆ There are holes in the rotor magnet plate and cylinder plate attaching bracket. Attach the rotor magnet plate so that hole (A) in the plate and hole (B) in the bracket across from the screw holes.

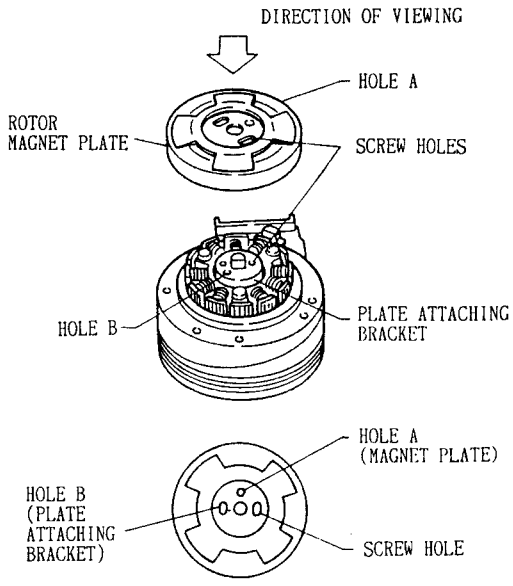


Fig. 7-1

ELECTRIC CIRCUIT ADJUSTMENTS

Test equipment and tapes necessary for adjustment

1) Dual-trace oscilloscope
2) Colour bar generator (PAL, SECAM)
3) VTVM
4) DC voltmeter
5) Frequency counter
6) CR Oscillator
7) Monitor TV
8) Alignment tape (MH-2) (PAL)
9) Alignment tape (MH-4) (SECAM)
10) Hi-Fi Alignment tape (36HMAFE-3-1)
11) Blank tape

Cautions on adjustments

1) If there are no special instructions, the following conditions apply:
   - Oscilloscope probe: 10:1
   - Oscilloscope synchronization: Auto-Sync
   - Tracking control: Electrical centre
     Press the TRACKING (▲) and (▼) buttons on the remote control simultaneously to set the tracking to the centre electrically.
   - Slow tracking control: Electrical centre
     (Unplug the mains lead from the AC outlet.) tracking to the centre electrically)
2) When making more than one adjustment, make adjustments in the order listed.
3) Be sure to perform the following adjustments after replacing IC702 (EAROM) on the timer circuit board.
   - Reverse Slow Tracking Preset
   - Forward Slow Tracking Preset
   - Level Meter

Notes when performing adjustment and check with the front panel removed

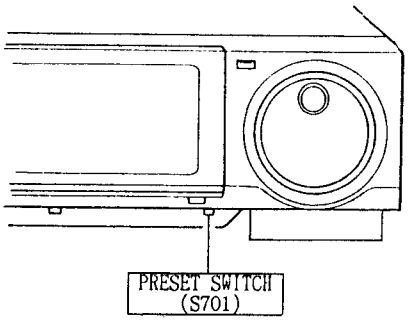
- Operation : Use the remote control.
- Removal of cassette : Press S702 (EJECT SW) on the timer circuit board.

Caution when checking the power supply block

Connect PG823 and PG2824 on the regulator circuit board to the connectors on the main circuit board. If the above connectors are disconnected and the power cord of the unassembled power supply block is plugged into an AC outlet, fuses FU851 and FU852 will blow.

Resetting the microprocessors

The microprocessors used in this unit can be reset by pressing switch (S701) on the Timer Circuit Board.



Servicing Position

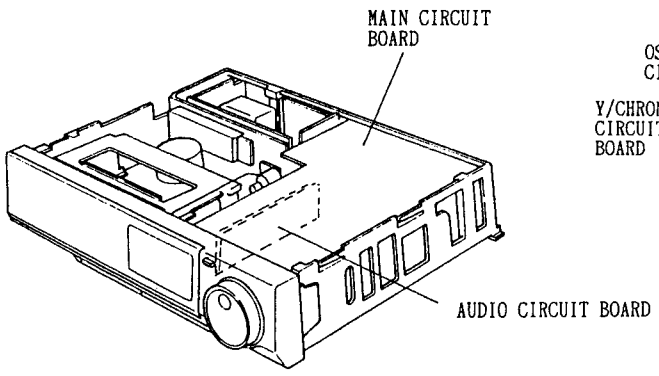


Fig. 1-1 MAIN, AUDIO Circuit Boards

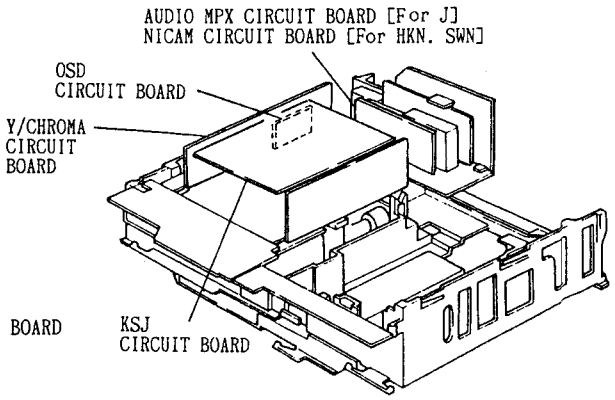


Fig. 1-2 NICAM, AUDIO MPX, Y/CHROMA Circuit Boards

ADJUSTMENT PARTS LOCATIONS

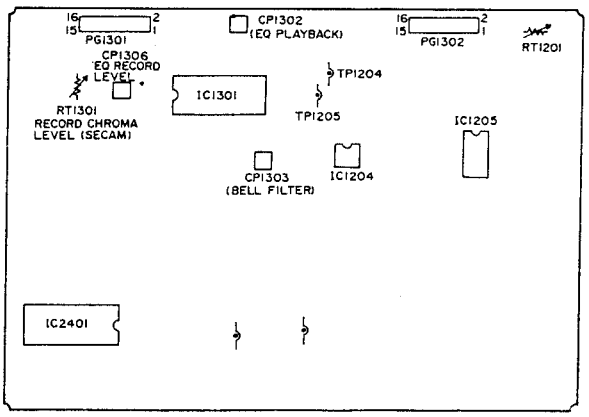


Fig. 1-2 KSJ Circuit Board (Component Side)

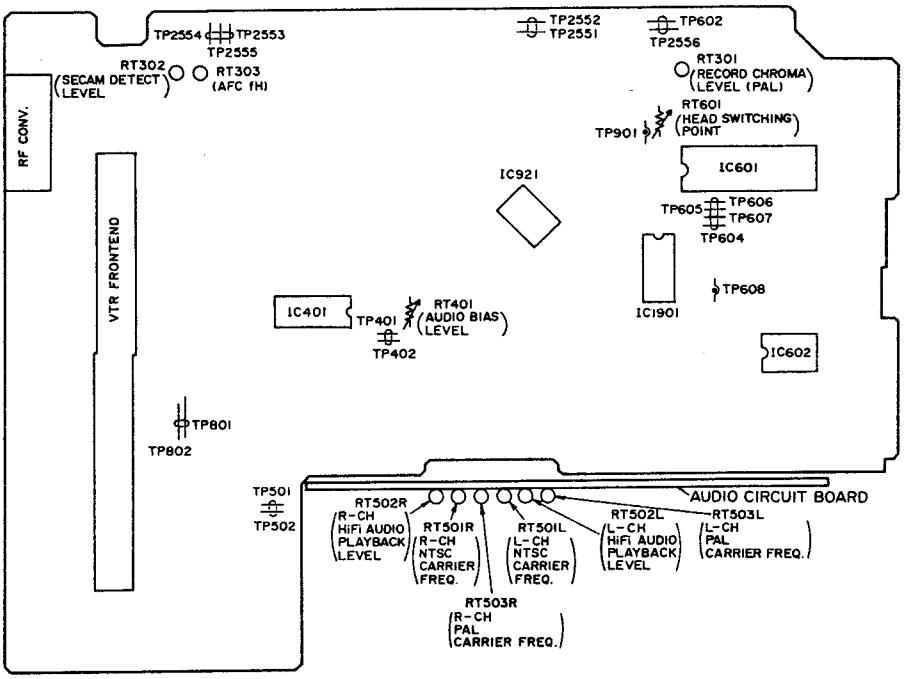


Fig. 1-4 Main Circuit Board (Solder Side)

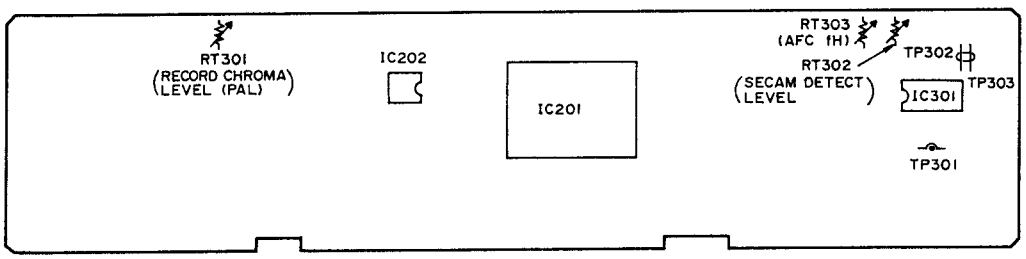


Fig. 1-5 Y/Chroma Circuit Board (Solder Side)

1. SERVO CIRCUIT BOARD ADJUSTMENTS

1. Head Switching Point Adjustment

Purpose of adjustment and fault occurring if incomplete

Purpose: Set the video head switching point to almost the centre where the CH-1 and CH-2 envelopes overlap each other during playback.

Fault:
- The vertical sync signal is degraded and vertical jitter occurs.
- Switching noise occurs in lower part of picture

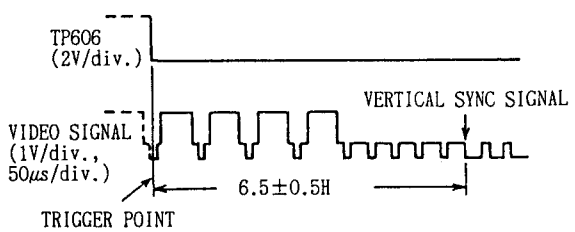
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope	• CH-1: VIDEO OUT • CH-2: TP605 (SW25Hz)	• Playback alignment tape (Stairsteps Section) • Tracking control: Electrical Centre	• RT601
• Alignment tape MH-2:PAL MH-4:SECAM			

Adjustment Procedure

〈Oscilloscope Settings〉
- Set sync slope switch to "−"
- Trigger with CH-2

Vertical sync signal : 6.5H±0.5H from trailing edge (trigger point) of SW25Hz pulse.

Waveforms



2. Vert. Sync Adjustment

Purpose of adjustment and fault occurring if incomplete

Purpose: Change timing for adding vertical drive pulse and suppress vertical jitter in picture during trick play.

Fault: Vertical jitter occurrs during trick play.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Monitor TV • PAL or SECAM colour bar generator • Blank tape	• RF OUT • VIDEO IN	• Record colour bar signal and play it back with this unit in STILL mode.	• TRACKING BUTTONS (▲/▼)

Adjustment Procedure

1) Tape Speed : SP
2) TRACKING BUTTONS : Suppress vertical jitter in picture.
3) Tape Speed : LP
4) TRACKIGN BUTTONS : Suppress vertical jitter in picture.

3. Reverse Slow Tracking Preset Adjustment

Purpose of adjustment and fault occurring if incomplete

Purpose: To adjust the timing with which brake pulses are generated for the capstan motor during reverse slow play and minimize noise.

Fault: • Noise occurs during reverse slow play and the picture is difficult to see.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Monitor TV • PAL or SECAM colour bar generator • Blank tape	• VIDEO OUT or RF OUT • VIDEO IN	• Slow tracking: Electrical centre	• TRACKING BUTTONS (▲/▼)

Note: Perform this adjustment with the front panel attached.

LP Reverse Slow Tracking Preset

1) Tape speed: LP
2) Record a colour bar signal and play it back with the same VTR.
3) Forcibly set the VTR to the reverse slow mode.
   Press the PAUSE button of the VTR and the TRACKING (▲) and (▼) buttons of the remote control simultaneously during play.
4) TRACKING BUTTONS: Distribute noise evenly in the upper and lower halves of the monitor screen.
5) Press the PLAY button to return the VTR to the play mode.
   When returned to the play mode, the preset data is written to the EAROM.

SP Reverse Slow Tracking Preset

Switch the tape speed to SP and perform the same as in steps 2) to 5) of the LP Revrse Slow Tracking Preset Adjustment.

4. Forward Slow Tracking Preset Adjustment

Purpose of adjustment and fault occurring if incomplete

Purpose: To adjust the timing with which brake pulses are generated for the capstan motor during SP slow play and minimize noise.

Fault: • Noise occurs during slow play and the picture is difficult to see.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Monitor TV • PAL or SECAM colour bar generator • Blank tape	• VIDEO OUT or RF OUT • VIDEO IN	• Slow tracking: Electrical centre	• TRACKING BUTTONS (▲/▼)

Note: Perform this adjustment with the front panel attached.

LP Forward Slow Tracking Preset

1) Tape speed: LP
2) Record a colour bar signal and play it back with the same VTR.
3) Forcibly set the VTR to the forward slow mode. Press the PLAY button of the VTR and the TRACKING (▲) and (▼) buttons of the remote control simultaneously during play.
4) TRACKING BUTTONS: Eliminate the noise from the monitor screen.
5) Press the PLAY button to return the VTR to the play mode. When returned to the play mode, the preset data is written to the EAROM.

SP Forward Slow Tracking Preset

Switch the tape speed to SP and perform the same as in step 2) to 5) of the LP Forward Slow Tracking Preset Adjustment.

2. Y/CHROMA CIRCUIT ADJUSTMENTS

1. EQ Record Level Adjustment(KSJ Board)

Purpose of adjustment and fault occurring if incomplete

Purpose: To adjust the frequency (fo) during recording to the specified value.

Fault: • The chroma level fluctuates.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope • Audio generator	• TP1304(REC EQ) • TP1303	• EE mode • SECAM mode	• CP1306 (EQ REC LEVEL)

Adjustment Procedure

Audio generator output level : 1.0715±0.01MHz, AC200±10mV

CP1306 : Reduce the output level to minimum.

Waveform

(50mV/div.,5ms/div.)

2. EQ Playback Level Adjustment(KSJ Board)

Purpose of adjustment and fault occurring if incomplete

Purpose: To adjust the frequency (fo) during play to the specified value.

Fault: • The chroma level fluctuates.

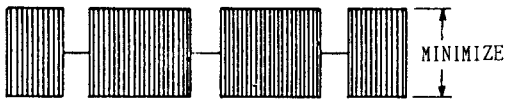
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope • Audio generator • Blank tape	• TP1302(PB EQ) • TP1303	• PLAY mode (without signal)	• CP1306 (EQ REC LEVEL)

Adjustment Procedure

Audio generator output level : 1.0715±0.01MHz, AC200±10mV

CP1302 : Maximize the output level.

Waveform



(0.1V/div.,5ms/div.)

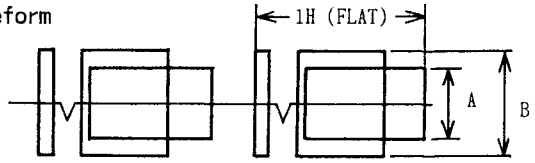
3. Bell Filter Adjustment(KSJ Board)

Purpose of adjustment and fault occurring if incomplete
Purpose: To adjust the frequency (fo) of the bell filter to the specified value.
Fault: • The chroma level fluctuates

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope • SECAM colour bar generator	• TP1302 • VIDEO IN	• EE mode • SECAM mode	• CP1303 (BELL FILTER)

Adjustment Procedure
Trigger with TP2556(H.SYNC).
CP1303 : flat the output level.

Waveform



A : B = 4 : 4 ± 0.2

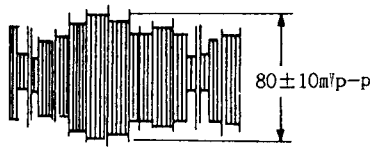
4. Record Chroma Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: Fine tune the chroma recording current.
Fault: • Colour becomes poor during recording or colour smears occur.

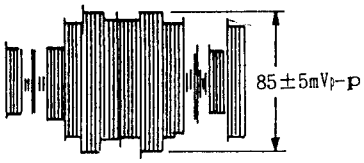
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• PAL or SECAM colour bar generator • Oscilloscope	• VIDEO IN • TP2551	• Record mode	• RT1301 (SECAM REC CHROMA LEVEL) • RT301 (PAL REC CHROMA LEVEL)

Adjustment Procedure
(SECAM): KSJ Board
Trigger with TP605(SW25).
RT1301: Set the record chroma level to 80±10mVp-p.
(PAL): Y/Chroma Board
Trigger with TP2556(H.SYNC).
RT301: Set the record chroma level to 85±5mVp-p.

Waveforms



(50mV/div.,20μs/div.)
SECAM



(50mV/div.,20μs/div.)
PAL

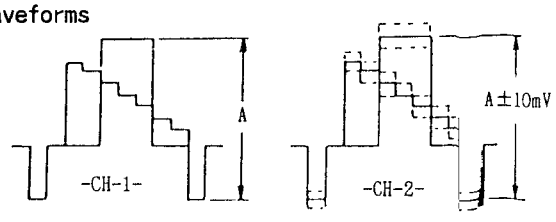
5. Y·Flicker Level Adjustment(KSJ Board)

Purpose of adjustment and fault occurring if incomplete
Purpose: To operate the vertical processor normally.
Fault: • Random noise may be conspicuous.
• Dropout may not be compensated.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope • Alignment tape MH-2:PAL MH-4:SECAM	• CH-1: TP1204(CCD VIDEO) • CH-2: TP1205(CCD VIDEO)	• Playback alignment tape (Colour bars section)	• RT1201

Adjustment Procedure
〈Oscilloscope setting〉
• Trigger with CH-2
RT1201:Set the amplitude of CH-2 waveform to ±10mV of that of CH-1 waveform.

Waveforms



(0.1V/div.,20μs/div.)

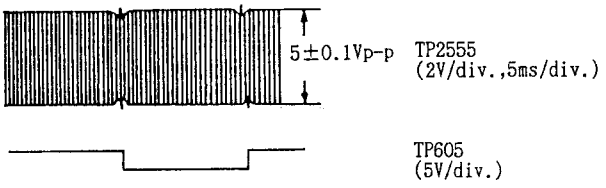
6. Secam Detect. Level Adjustments (Y/Chroma Board)

Purpose of adjustment and fault occurring if incomplete
Purpose: Set the Secam detect level to the specified value.
Fault: During automatic discrimination PAL and SECAM are discriminated incorrectly.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
• Oscilloscope • SECAM colour bar generator (Full colour bar)	• CH-1: TP2555 • VIDEO IN	• EE mode	• RT302

Adjustment Procedure
1) Set the colour system switch to SECAM position
2) RT302: Set the SECAM detect level to the 5±0.1Vp-p

Waveforms



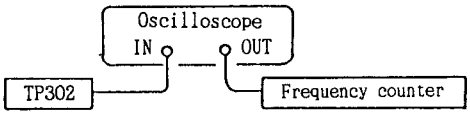
7. AFC fH Adjustment(Y/Chroma Board)

Purpose of adjustment and fault occurring if incomplete
Purpose: Set the AFC oscillation to 15.75kHz.
Fault: OSD characters are flowed.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• PAL colour bar generator • Oscilloscope • Frequency counter	• VIDEO IN • TP302 • Oscilloscope output	• E-E mode • OSD menu mode	• RT303

Adjustment Procedure
1) Short a jumper between IC301-15pin and TP303.
2) RT303: The frequency counter reads 15750±100Hz.

Connection Diagram



4. AUDIO CIRCUIT ADJUSTMENTS

1. Carrier Frequency Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the audio carrier frequency to the specified value.
Fault: • Compatibility with tapes recorded by another VTR cannot be obtained.
• Hi-Fi audio is not played back.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
• Frequency counter	• TP501 (when adjusting RT501L, RT503L) • TP502 (when adjusting RT501R, RT503R)	• REC mode	• RT501L (L-CH) NTSC • RT501R (R-CH) NTSC • RT503L (L-CH) PAL • RT503R (R-CH) PAL

Adjustment Procedure
• NTSC
RT501L : The frequency counter reads 1300kHz±4kHz at TP501.
RT501R : The frequency counter reads 1700kHz±4kHz at TP502.

• PAL
RT503L : The frequency counter reads 1400kHz±4kHz at TP501.
RT503R : The frequency counter reads 1800kHz±4kHz at TP502.

2. Hi-Fi Audio Playback Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the Hi-Fi audio playback level to the specified value.
Fault: • The optimum volume cannot be obtained.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Points
• VTVM • Hi-Fi alignment tape (36HMAFE-3-1) (Parts No.7099175)	• When adjusting RT502L: AUDIO OUT L • When adjusting RT502R: AUDIO OUT R	• Play Hi-Fi alignment tape.	• RT502L (L-CH) • RT502R (R-CH)

Adjustment Procedure
Note: Adjust RT502L and RT502R in the same way.
Set the reading of the VTVM to -4.8±1dBs.

3. Audio Bias Level Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: Set audio bias during recording to optimum level.
Fault: • Bias too high: High-frequency response deteriorates.
• Bias too Low: Sound tends to be distorted.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• VTVM • Blank tape	• TP401(BIAS) • TP402(BIAS GND)	• Non-signal recording	• RT401

Adjustment Procedure
RT401: The VTVM reads 3.0mVrms±0.1mVrms.

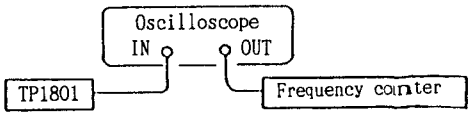
5. NICAM CIRCUIT ADJUSTMENTS
1. Clock VCO Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the frequency generated by the CLOCK VCO to a specified value.
Fault: NICAM sound cannot be discriminated.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope input • Frequency counter	• TP1801 • Oscilloscope output	• Stop mode (Non-signal)	• CT1801

Adjustment Procedure
1) Short IC1801-12pin to -21pin.
2) The frequency counter reads 5824000±70Hz.

Connection Diagram



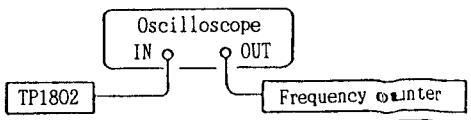
2. Carrier VCO Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the frequency generated by the carrier VCO to a specified value.
Fault: NICAM sound cannot be discriminated.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope • Frequency counter	• TP1802 • Oscilloscope output	• Stop mode (Non-signal)	• CT1802

Adjustment Procedure
The frequency counter reads 5850000±70Hz.

Connection Diagram



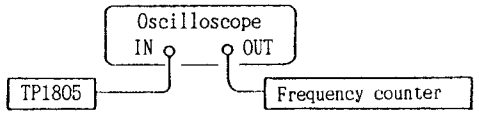
3. D/A Converter Clock Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To set the frequency generated by the D/A converter clock to a specified value.
Fault: NICAM sound cannot be discriminated.

Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• Oscilloscope input • Frequency counter	• TP1805 • Oscilloscope output	• Stop mode (Non-signal)	• CT1803

Adjustment Procedure
The frequency counter reads 8192000±150Hz.

Connection Diagram



6. TIMER CIRCUIT ADJUSTMENT

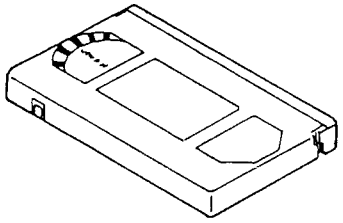
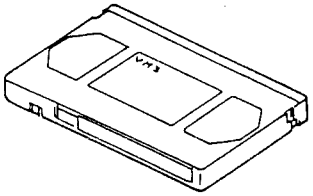
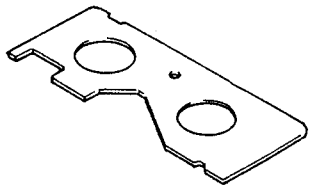
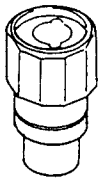
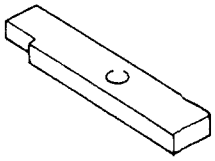
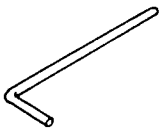
1. Level Meter Adjustment

Purpose of adjustment and fault occurring if incomplete
Purpose: To make the level meter operate correctly.
Fault: • The level meter does not operate normally.

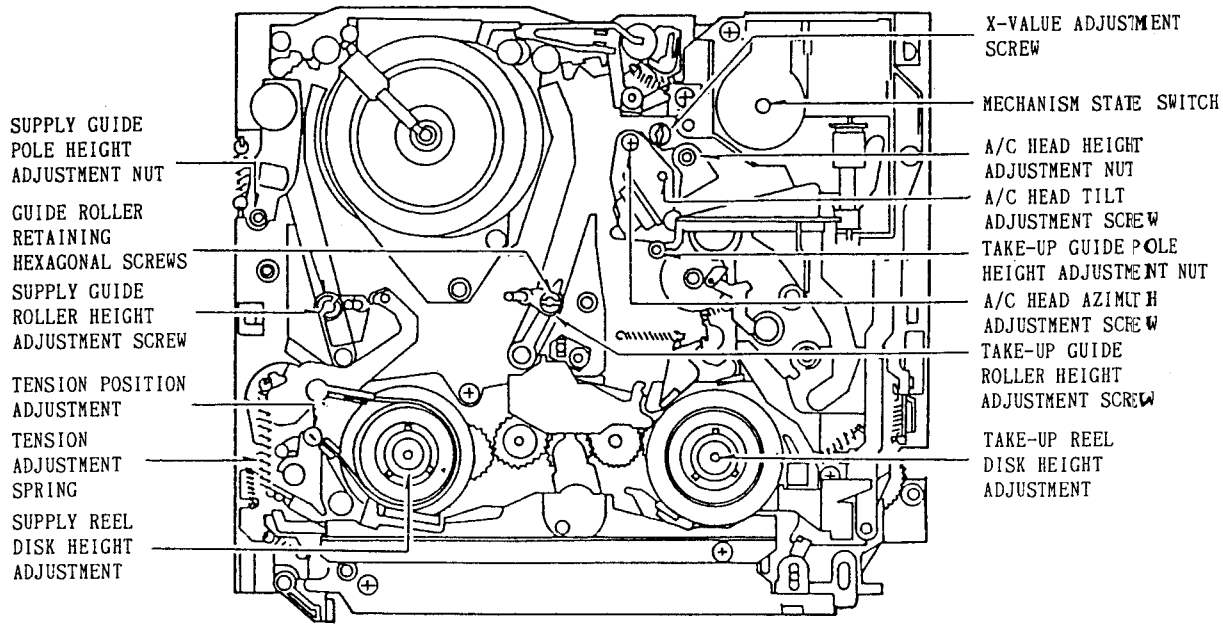
Test Equipment/Jigs	Test Equipment Connection Points	VTR State	Adjustment Point
• CR oscillator • VTVM	• AUDIO IN L-CH • AUDIO OUT L-CH	• LINE mode (AUDIO LEVEL: Position 5)	• TRACKING (▲/▼) and stop buttons

Adjustment Procedure
1) Connect a VTVM to the AUDIO OUT jack.
2) Connect a CR oscillator to the AUDIO IN jack.
3) Adjust the audio output of the CR oscillator so the VTVM reads -4.75 to -4.8dBs.
   The frequency should be 1kHz.
4) Press and hold the STOP button (for more than 1 second) while simultaneously holding both TRACKING buttons (▲/▼) of the remote control depressed and check that the 0dB segments of the level meter light.
5) Set the AUDIO LEVEL (REC Volume) controls to minimum and check that the -40dB segments of the level meter do not light.
6) If the above cannot be confirmed, perform readjustment and then check IC702 (EAROM).

MECHANISM ADJUSTMENT
JIGS AND TAPES FOR ADJUSTMENT

1. Back Tension Meter Parts No.7099004 	2. Alignment Tape - MH-2 - PAL -MH-4- Parts No.7099052 Parts No.7099053 	3. Master Plane Parts No.7099279 
4. Torque Gauge Parts No.7099039 	5. Torque Gauge Adaptor Parts No.7099035 	6. Reel Disk Height Jig Parts No.7099038 
7. 1.5mm Hexagonal Wrench 0.9mm Hexagonal Wrench 		

ADJUSTMENT PARTS LOCATIONS


SUPPLY GUIDE POLE HEIGHT ADJUSTMENT NUT
GUIDE ROLLER RETAINING HEXAGONAL SCREWS
SUPPLY GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
TENSION POSITION ADJUSTMENT
TENSION ADJUSTMENT SPRING
SUPPLY REEL DISK HEIGHT ADJUSTMENT
X-VALUE ADJUSTMENT SCREW
MECHANISM STATE SWITCH
A/C HEAD HEIGHT ADJUSTMENT NUT
A/C HEAD TILT ADJUSTMENT SCREW
TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT NUT
A/C HEAD AZIMUTH ADJUSTMENT SCREW
TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
TAKE-UP REEL DISK HEIGHT ADJUSTMENT

Top View of Mechanism

MECHANICAL PARTS ADJUSTMENT

1. Mechanism State Switch

Purpose: To detect the mechanism state correctly and prevent malfunctions.

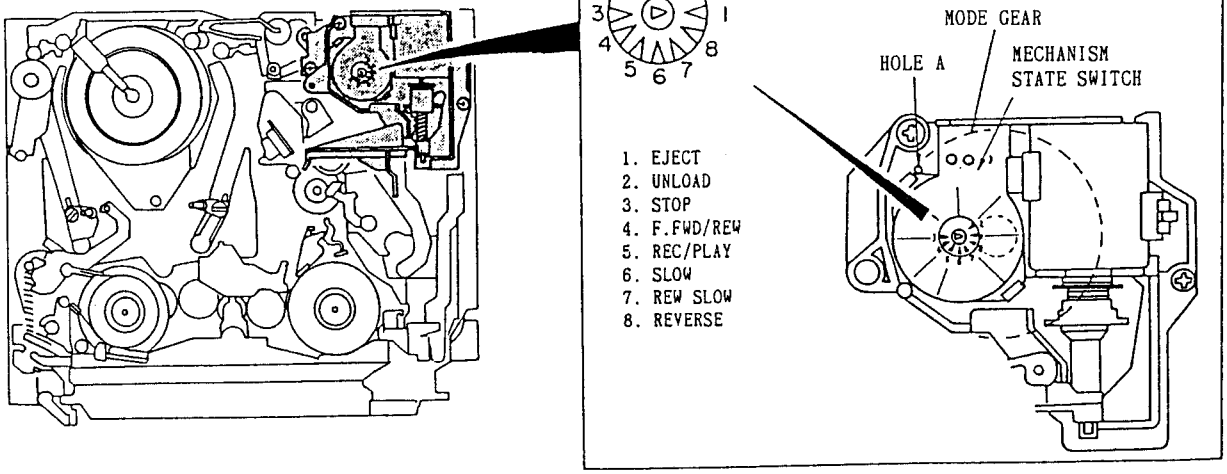
Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Blank tape	———	• Eject mode (with the cassette ejected)	• Mechanism state switch • Mode gear

Adjustment procedure

1) Check that the arrow on the centre shaft of the mechanism state switch points to the arrow of mechanism mode indication number 1. Also check that hole (A) beside the mechanism state switch and the hole in the mode gear are aligned.

2) If the above alignments are not obtained, adjust as follows.
   1. Remove the mechanism state switch/loading motor assembly. (See "MAIN MECHANICAL COMPONENTS REMOVAL" in CHAPTER 2.)
   2. Move the mode gear to align the position of hole (A).
   3. Turn the gear on the back of the mechanism state switch so that the arrow on the centre shaft of the switch points to the arrow of mechanism mode indication number 1.
   4. Reinstall the mechanism state switch/loading motor assembly in the above condition.

3) Load a blank tape and perform various operations to check that loading and unloading are performed correctly.



TAPE TRANSPORT SYSTEM PARTS ADJUSTMENT

The tape transport system is the path from the supply reel disk passing through the video heads to the take-up reel disk. The transport system parts, especially the parts which directly come into contact with a tape, should be kept clean without scratches, dust, oil, etc.

The tape transport system has been adjusted before the unit is shipped from the factory. Therefore, when parts in the transport system are replaced, the transport system is stabilized by only adjusting the new parts correctly.

1. Reel Disk Height Adjustment

Purpose: To set the reels of the cassette to the specified height, thus determining the height of tape.

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Master plane (Parts No.7099279) • Reel disk height jig (Parts No.7099038)	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	———	• Spacers in the supply and take-up reel disks

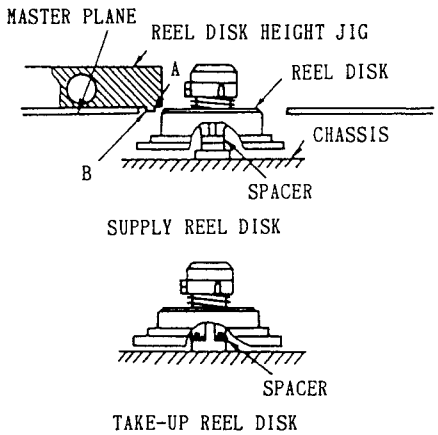
Adjustment procedure

1) Check that the reel disk is between sections A and B of the reel disk height jig.
2) If the disk is not between sections A and B of the jig, replace the spacer (0.5mm thick) in the reel disk or adjust them.

[Caution]

When the tension arm and tension band are removed, adjust the tension pole position and tension after reinstalling them.

Adjustment diagram



2. Tension Pole Position and Tension Adjustment

Purpose: To make the tension of tape constant so that the contact between the video heads and tape is stabilized.

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
Position adjustment ———	———	1) Remove the top cover. 2) Set the VTR to the loading state without inserting a cassette. (See page 4-11)	**Position adjustment:** Tension band holder
Tension adjustment • Back Tension Meter (Parts No.7099004)	———	**Tension adjustment** 3) Play the tension cassette.	**Tension adjustment:** Tension spring hooking position

Adjustment procedure

- Position Adjustment -

1) Insert a flat bladed screwdriver into the groove for the tension position adjustment and set the clearance between the tension arm and chassis to 0 to 0.1mm.
2) After adjustment is completed, perform loading without inserting a cassette and recheck the tension pole position.

- Tension Adjustment -

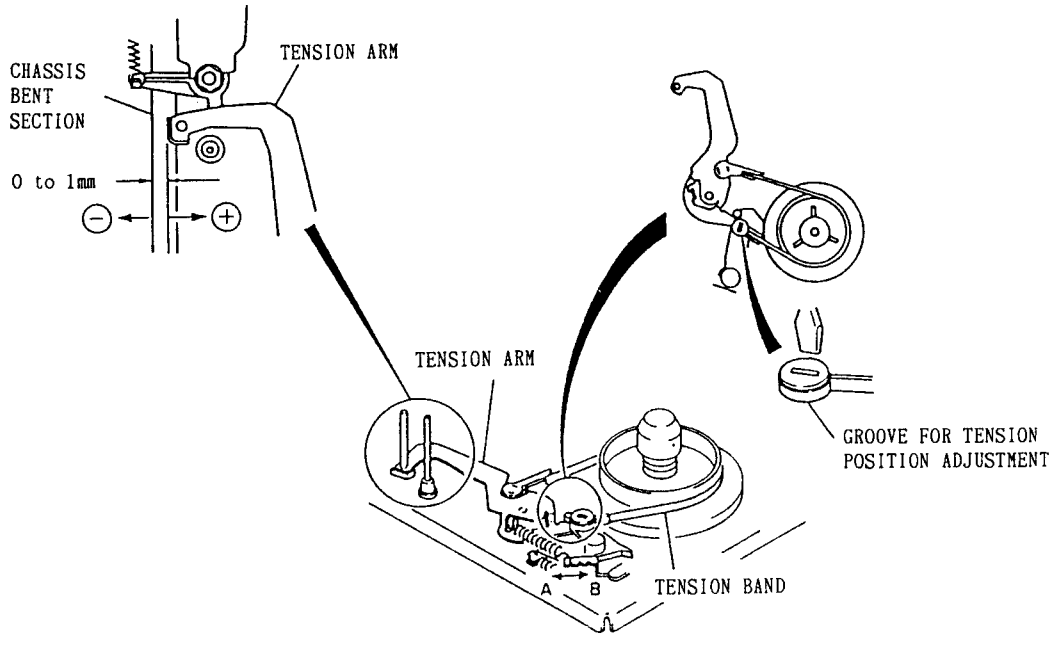
Reading of Back Tension Meter : 34 to 44 g-cm (reference valul)

If the reading is higher than the reference, move the spring in direction (A).

If the reading is lower than the reference, move the spring in direction (B).

Caution: When the tension position was changed greatly (more than 6 g-cm), recheck the tension pole position. If it is drifted, readjust the tension pole position and tension.

Adjustment diagram



3. Guide Pole Height Adjustment

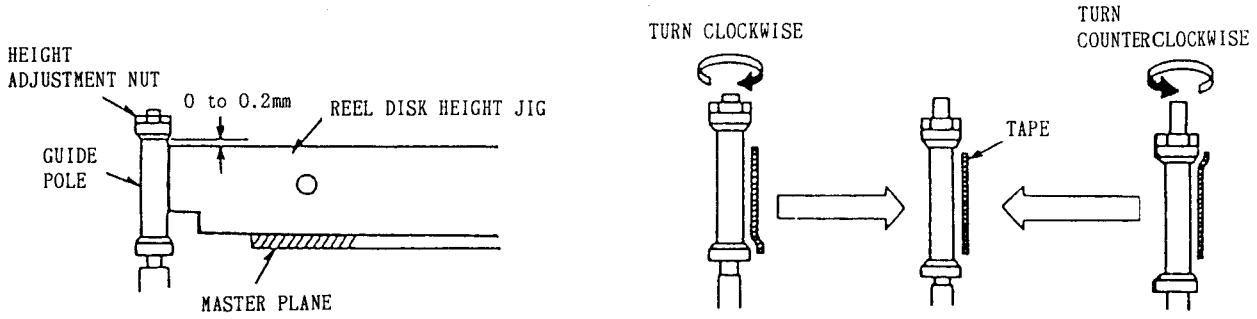
Purpose: To regulate the tape height.

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Master plane (Parts No.7099279) • Reel disk height jig (Parts No.7099038)	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	———	• Nuts on the supply and take-up guide poles
• Blank tape	———	• Playback mode	

Adjustment procedure

1) Set the clearance between the bottom of the guide pole's upper flange and top of the reel disk height jig is 0 to 0.2mm.
2) Load a blank tape to run it and check that the tape does not ride over the upper and lower flanges of the guide pole.
3) If the tape rides over either flange, adjust the height of guide pole as follows.
   If the tape rides over the upper flange, turn the nut counterclockwise.
   If the tape rides over the lower flange, turn the nut clockwise.

Adjustment diagram



4. Guide Roller Height Adjustment

Purpose: To regulate the height of tape so that the bottom of tape runs along the tape guide line on the cylinder.

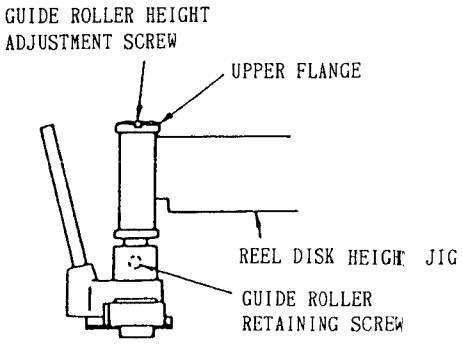
Coarse Adjustment

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Master plane (Parts No.7099279) • Reel disk height jig (Parts No.7099038) • 0.9mm Hexagonal wrench	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	———	Height adjustment screws on the supply and take-up guide rollers

Adjustment procedure

1) Loosen the guide roller retaining screw (so that the guide roller does not turn during loading, unloading and play).
2) Align the bottom of the guide roller's upper flange and the top of the reel disk height jig.
3) Perform the precise adjustment continuously.

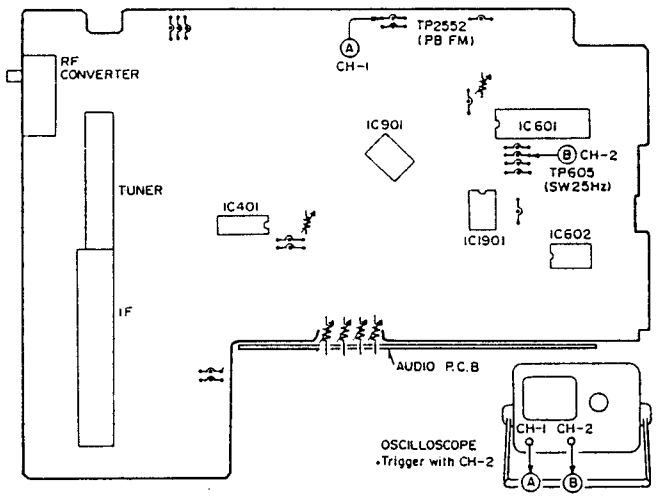
Adjustment diagram



Precise Adjustment

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Oscilloscope	• CH-1: TP2552 (PB FM) • CH-2: TP605 (SW25Hz)	• Play alignment tape. (Colour bars section)	• Guide roller height adjustment screws
• Alignment tape (MH-2:PAL / MH-4:SECAM) • 0.9mm Hexagonal wrench	———		

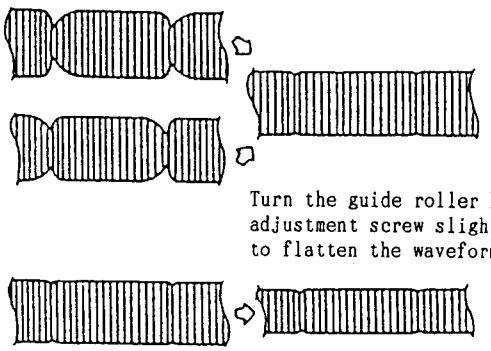
Connection diagram



Adjustment procedure

1) Tracking control (playback) : Auto tracking mode
   (when this adjustment is performed after the cylinder has been replaced, set the tracking control so that the FM output is maximum.)
2) Height adjustment screw: Flatten the FM envelope.
3) Press the tracking control up and down buttons.
4) Check that the FM drops at the start and end of FM envelope are uniform.
5) Tighten the guide roller retaining screw.

Waveforms



Turn the guide roller height adjustment screw slightly to flatten the waveform.

Tracking control
: Auto Tracking mode

Press the tracking control buttons.

5. Audio / Control (A/C) Head Adjustment

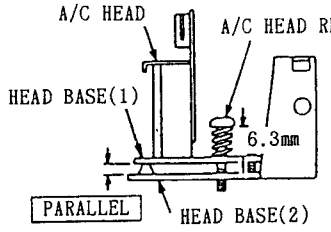
Purpose: To keep the contact between the tape and head even so the specified track is recorded and played back.

Coarse Adjustment

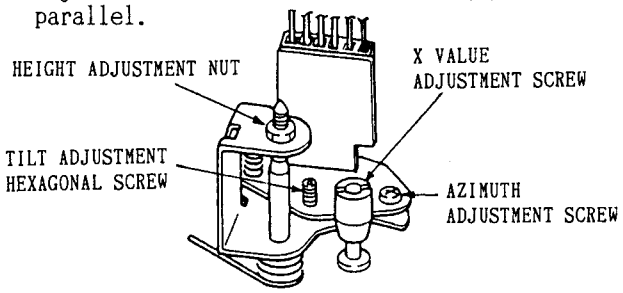
Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Master plane (Parts No.7099279) • Reel disk height jig (Parts No.7099038) • 1.5mm Hexagonal wrench	1) Remove the cassette loading mechanism. 2) Mount the master plane and place the reel disk height jig on it.	———	• A/C head retaining screw • Azimuth adjustment screw • Height adjustment nut • Tilt adjustment screw
• Blank tape	———	• Run the blank tape.	

Adjustment procedure/adjustment diagrams

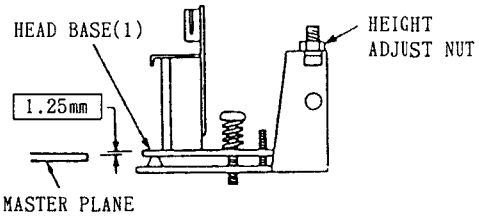
1) A/C head retaining screw: Check that the spring section of the A/C head retaining screw protrudes 6.3mm over the top of head base (1).



2) Tilt adjustment hexagonal screw, azimuth adjustment screw: Make head bases (1) and (2) parallel.

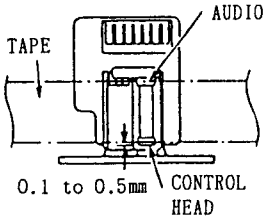


3) Height adjustment nut: Set the clearance between the master plane and head base (1) to approx. 1.25mm.



4) Remove the adjustment jigs, load a blank tape and set the VTR to the play mode.

5) Check that there is no conspicuous curling and riding over around the A/C head. If there is conspicuous curling or riding over, readjust the tilt adjustment hexagonal screw, azimuth adjustment screw and height adjustment nut. When the bottom edge of tape is 0.1 to 0.15mm from the bottom edge of the control head's core, the height of A/C head is ideal.



6) Perform the precise adjustment continuously.

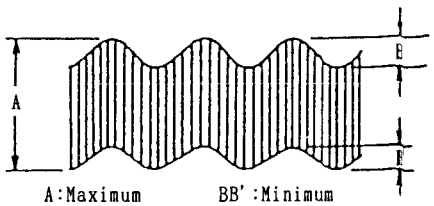
Precise Adjustment

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Oscilloscope • Alignment tape (MH-2:PAL, MH-4:SECAM) • 1.5mm Hexagonal wrench	• AUDIO OUT jack	• Play alignment tape (Stairsteps section)	• Azimuth adjustment screw • Height adjustment nut • Tilt adjustment screw

Adjustment procedure

1) Adjust the azimuth adjustment screw, height adjustment nut and tilt adjustment hexagonal screw slightly and alternately: Make the audio output maximum and flat (minimum fluctuations).

Waveform diagram

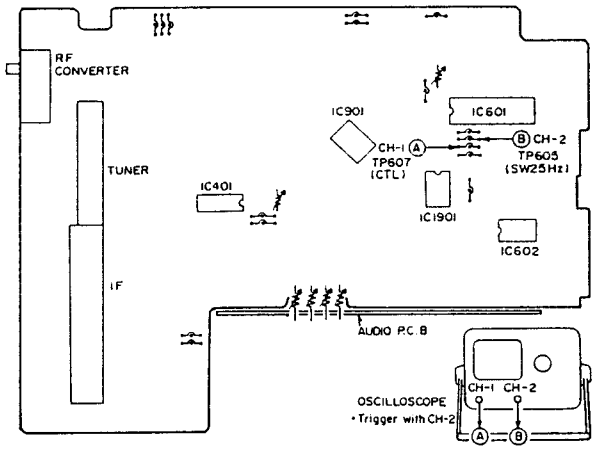


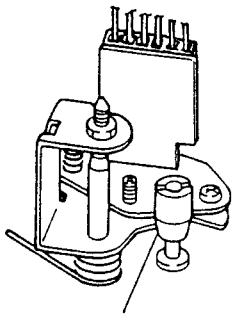
6. X Value Adjustment

Purpose: To obtain compatibility with other VTRs.

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Oscilloscope	• CH-1: TP607 (CTL) • CH-2: TP605 (SW25Hz)	• Play alignment tape (Stairsteps section)	• X value adjustment screw
• Alignment tape (MH-2:PAL / MH-4:SECAM) • 1.5mm Hexagonal wrench	———		

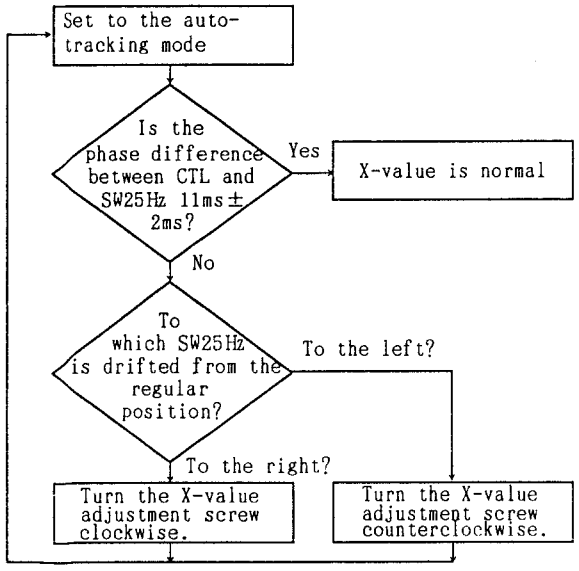
Connection diagram



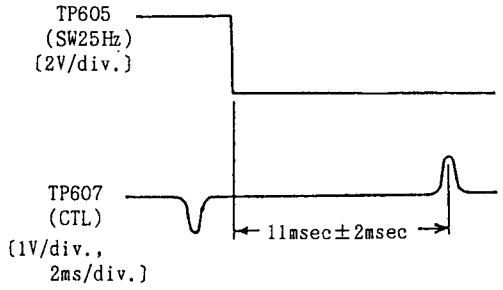


Adjustment procedure

Adjust so that the phase difference between the CTL pulse (positive pulse) and the SW25Hz signal is 11ms±2ms when the autotracking function operates.


Set to the auto-tracking mode
Is the phase difference between CTL and SW25Hz 11ms± 2ms?
Yes
X-value is normal
No
To which SW25Hz is drifted from the regular position?
To the left?
To the right?
Turn the X-value adjustment screw clockwise.
Turn the X-value adjustment screw counterclockwise.

Waveforms



7. Adjustments After Replacing Cylinder (Video Heads)

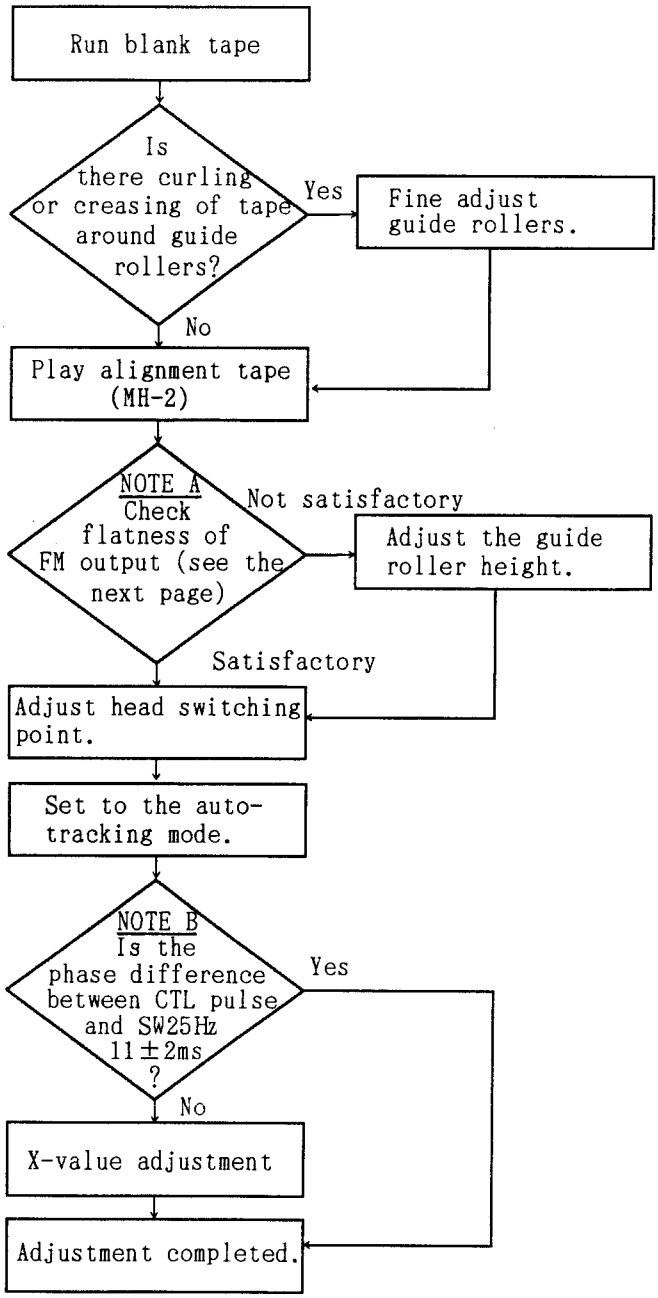
Purpose: To suppress drift in the height relative to the guide roller and to minimize the X value after replacing the cylinder.

Test equipment/jig	Preparation for adjustment	State of VTR	Adjustment points
• Oscilloscope	Checking the flatness • CH-1: TP2552 (PB FM) • CH-2: TP605 (SW25Hz)	• Run the blank tape	• Guide rollers (precise adjustment on page 4-6) • Head switching point (page 3-3) • X value (page 4-8)
• Alignment tape (MH-2:PAL, MH-4:SECAM) • Blank tape • 0.9mm/1.5mm Hexagonal wrenches • X value adjustment screwdriver		• Play alignment tape (Stairsteps section)	

Checking/adjustment procedure

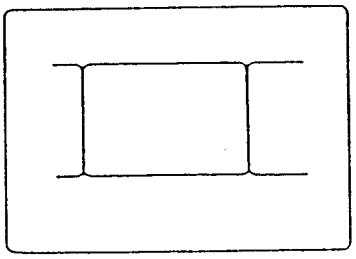
NOTE A: See page 4-6 for the connection of the test equipment.

NOTE B: See page 4-8 for the connection of the test equipment.

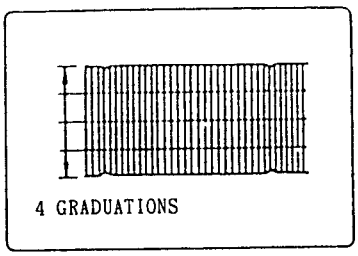


Checking procedure of the flatness and fluctuations of FM output and waveform diagrams

1) Set to the auto tracking mode.

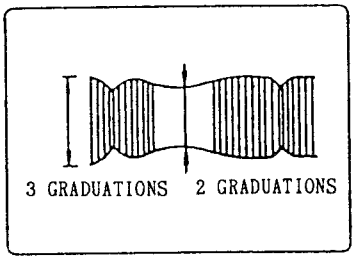


2) Fine tune the voltage level range of the oscilloscope to set the FM output to 4 graduations.



3) Press the tracking control buttons to set the maximum amplitude of the FM output 3 graduations.

4) Check that the mimimum amplitude is more than 2 graduations.



5) Check that the level fluctuations between the maximum and minimum amplitudes are less than 13%.

8. Tension/Torque Checks

Purpose: It is necessary to check the tension, torque and compression force at the tape take-up section and moving section to make the tape running smooth and satisfy the basic performance of the VTR. Check these if the tape running is not smooth or the tape speed is abnormal.

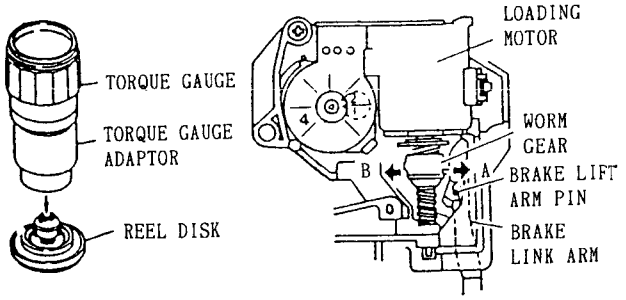
Test equipment/jigs		State of VTR	
• Torque gauge • Torque gauge adaptor		• Set the VTR to each operation mode without inserting a cassette. (See page 4-11)	
Item	VTR operation mode	Measured reel	Measured value
Main brake torque	Stop (Note)	Supply & take-up reels	60 ~ 180 g·cm
Slack removal torque	Unloading	Supply reel	120 ~ 250 g·cm
Fast forward torque	Fast forward	Take-up reel	400 g·cm or more
Rewind torque	Rewind	Supply reel	400 g·cm or more
Take-up torque	Play	Take-up reel	75 ~ 130 g·cm
Back-tension torque	Fast forward	Supply reel	3 ~ 13 g·cm
	Rewind	Take-up reel	
	Super rewind	Take-up reel	8 ~ 18 g·cm
	Reverse play	Take-up reel	30 ~ 60 g·cm
	Reverse slow	Take-up reel	60 ~ 120 g·cm
Slow torque	Slow	Take-up reel	40 ~ 90 g·cm
Reverse play torque	Reverse play	Supply reel	140 ~ 190 g·cm

Checking method

The values are measured using a torque gauge and a torque gauge adaptor with the torque gauge fixed.

Note: Turn the worm gear in the direction of arrow (A) in the stop mode and shift the pointer on the mechanism state switch to "4" so as to apply the main brake to the supply reel disk. Then turn the worm gear in the direction of arrow (B) so that brake link arm is released from the brake lift arm pin.(Set the reel drive idler to the centre position.)

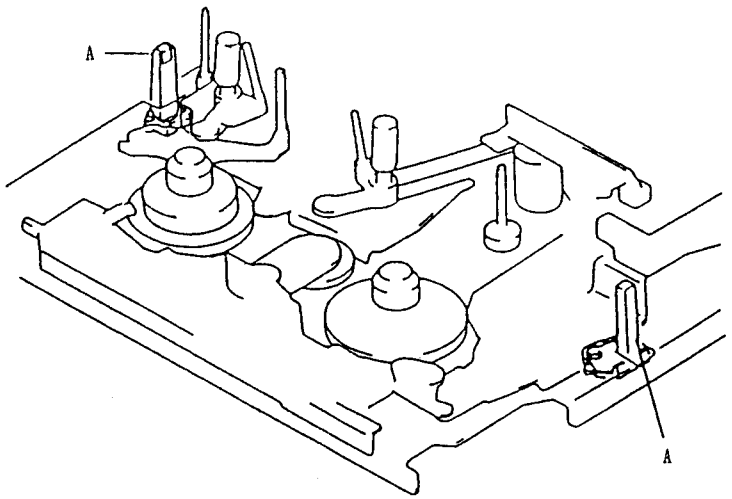
Adjustment diagram



9. To Set the VTR to the Loading State without Inserting a Cassette

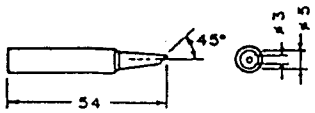
1) Remove the top cover and front panel. 2) Remove the cassette loading mechanism. 3) Unplug the mains lead form the AC outlet. 4) Cover the supply and take-up end sensors (sections A in the figure below) with black masking tape, etc. to shut off the light. 5) Plug the mains lead into the AC outlet. 6) Turn the VTR on. The VTR can accept the inputs of each mode in this state. However, the rewind operation cannot be performed for more than a few seconds because the take-up reel disk in the stop state and reel pulses cannot be detected.	(Cautions) Always return the VTR to the original state in the following order after the above operations have been performed. 1) Remove the masking tape, etc. from the supply and take-up end sensors. 2) Unplug the mains lead from the AC outlet to reset the system control microprocessor.

Adjustment diagram

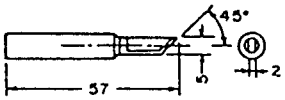


SOLDERING IRON TIPS FOR REPAIRING

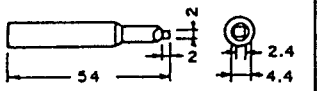
1. Round Tip
(for Soldering)
P No. 7099122



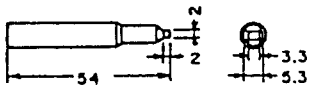
2. Flat Tip
(for Soldering)
P No. 7099123



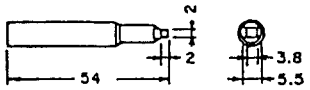
3. 2×2 CR Tip
(for Unsoldering)
P No. 7099124



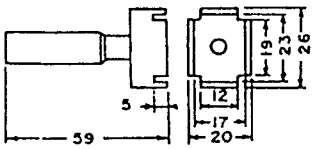
4. 3×2 CR Tip
(for Unsoldering)
P No. 7099125



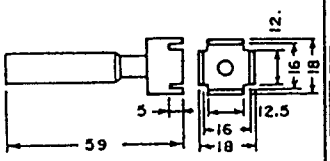
5. 4×2 CR Tip
(for Unsoldering)
P No. 7099126



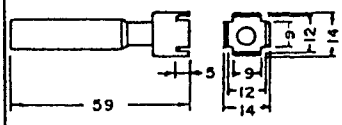
6. 23×17 Box Tip
(for Unsoldering)
P No. 7099127



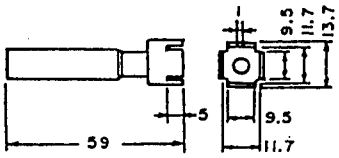
7. 16×16 Box Tip
(for Unsoldering)
P No. 7099128



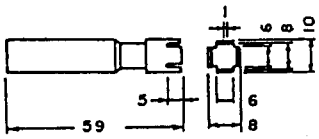
8. 12×12 Box Tip
(for Unsoldering)
P No. 7099129



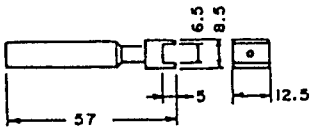
9. 12×11 Box Tip
(for Unsoldering)
P No. 7099130



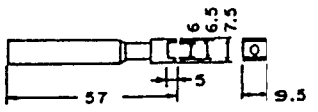
10. 8×8 Box Tip
(for Unsoldering)
P No. 7099131



11. 7×13 Channel Tip
(for Unsoldering)
P No. 7099132



12. 6×10 Channel Tip
(for Unsoldering)
P No. 7099133



13. 7×9 Channel Tip
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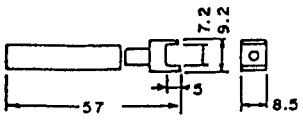
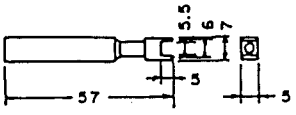
P No. 7099134



14. 5×5 Channel Tip
(for Unsoldering)
P No. 7099135



MAINTENANCE/INSPECTION PROCEDURE

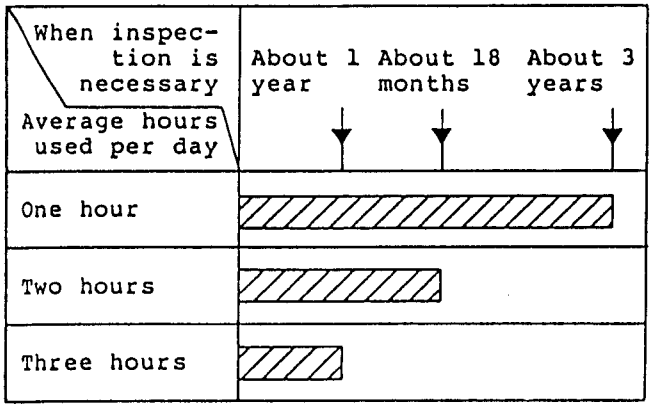
1. Required Maintenance

The recording density of a VTR is much higher than that of an audio tape recorder. VTR components must be very precise, at tolerances of 1/1000 mm, to ensure compatible with other VTRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn-out parts and lubrication, is necessary.

2. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they are greatly according to the way in which the customer uses the VTR, and the environment in which the VTR is used. But, in general home use, a good picture will be maintained if the inspection and maintenance is done every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1



3. Check before starting Repairs

The following faults can be remedied by cleaning and oiling. Check the need for lubrication and the conditions of cleanliness in the unit. Check with the customer to find out how often the unit is used. If from that you determine that the unit is ready for inspection and maintenance, check the following parts.

Table 2

Phenomenon	Inspection Location
Poor S/N, no colour	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, reel belt or flywheel belt
Vertical jitter, horizontal jitter	Dirt on video head or in tape transport system
Colour beats	Dirt on full-erase head
Low volume or sound distorted	Dirt on audio/control head
Fast forward or rewind is not done or rotation is slow	Dirt on reel belt

4. Tools Needed for Inspection and Maintenance

(1) Head cleaning kit
(2) VTR oil kit
(3) Alcohol
(4) Gauze
(5) Screwdriver for adjusting X-value

Table 3 Locations for Greasing and Oiling using the Kit

Name	Oil or Greasing Location
Sonic Slidas Oil (#1600)	Oil low-speed rotating sections
Froil (GB-TS-1)	Lubricate metal or molded sections under light load
Lock paint	Fix adjustment screws

The above oils and greases are in the kit prepared especially for VTR maintenance. Use this kit for lubrication.

5. Maintenance Procedures

5-1 Cleaning

(1) Cleaning video head

First use a cleaning tape. If dirt on head is too stubborn to remove by tape, use the cleaning kit. Moisten the cleaning stick with cleaning fluid at the point indicated. Touch the stick to the head tip and gently turn the head (rotating cylinder) to the right and left.
(Do not move the stick vertically and make sure that only the chamois leather on the stick comes into contact with the head. Otherwise, the head may be damaged.)
Thoroughly dry the head. Then test run a tape. If cleaning fluid remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Cleaning the tape transport system and drive system, etc.

Wipe with gauze moistened with alcohol.

Notes:
1) The tape transport system is the system which comes into contact with the running tape. The drive system consists of those parts which run the tape.
2) Make sure that during cleaning you do not touch the tape transport system with the tip of a screwdriver and that no force is applied to the system that could deform it.

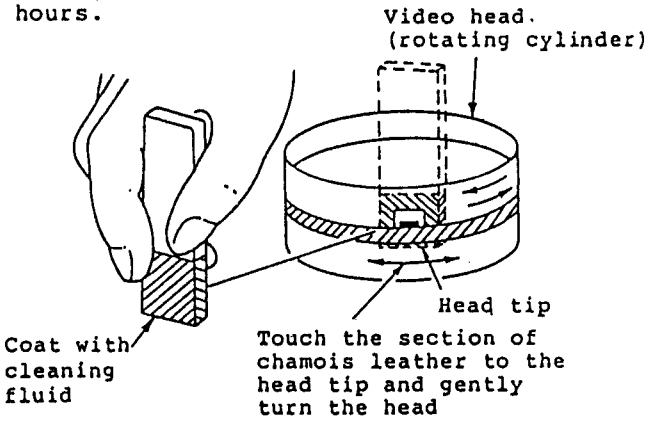
5-2 Lubrication

(1) Guidelines for lubricating with oil

Use the oiler to apply one or two drop of Sonic Slidas oil. Make sure not to use too much oil because it may spill over or leak out coming into contact with rotating parts and causing slippage or other problems. If too much oil is applied, wipe clean with alcohol.

(2) Periodic oil lubrication

Oil specified locations every 1,000 hours.


Video head.
(rotating cylinder)
Head tip
Coat with cleaning fluid
Touch the section of chamois leather to the head tip and gently turn the head

5-3 Greasing

(1) Greasing guidelines

Apply grease Froil, with a stick or brush. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with gauze moistened with alcohol.

(2) Periodic greasing

Grease specified locations every 5,000 hours.

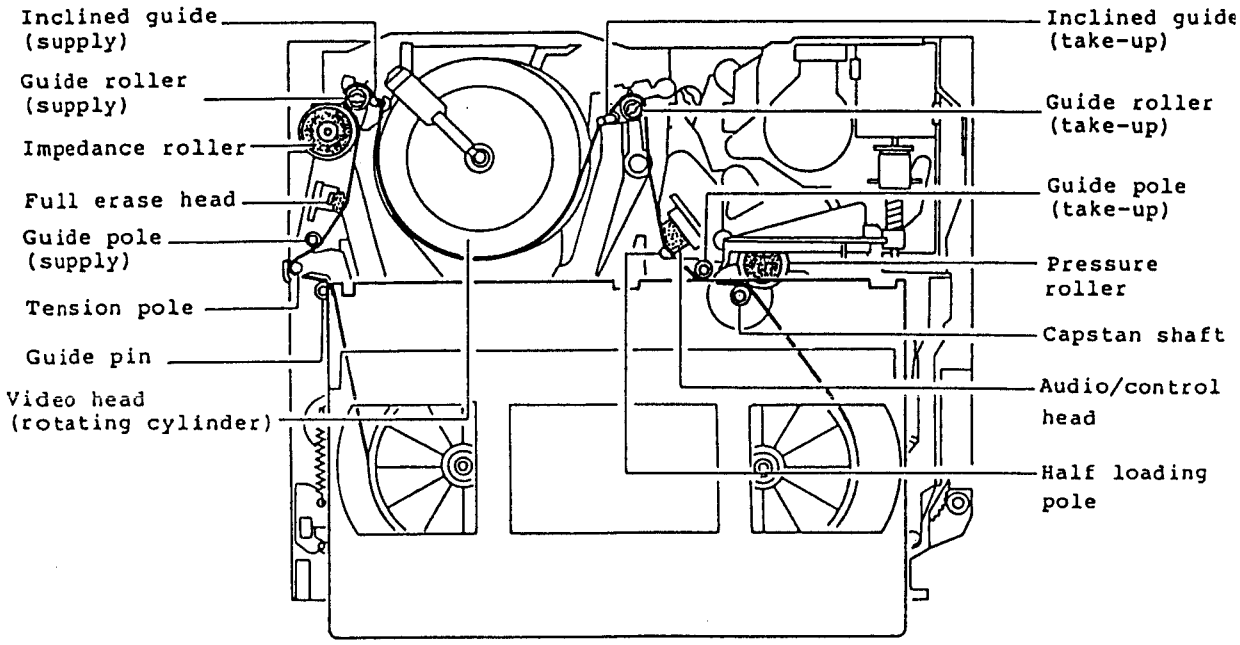


Fig. 1 Tape Transport System

6. Inspection Locations

Phenomenon	Inspection Location	Replacement
Colour beats	① Dirt on full erase head	
Poor S/N, no colour	② Dirt on video heads	○
Vertical jitter	③ Dirt on video heads Dirt in tape transport system	
Low volume, sound disordered	④ Dirt on audio/control head	○
Tape does not run. Tape is slack.	⑤ Dirt on pressure roller	○

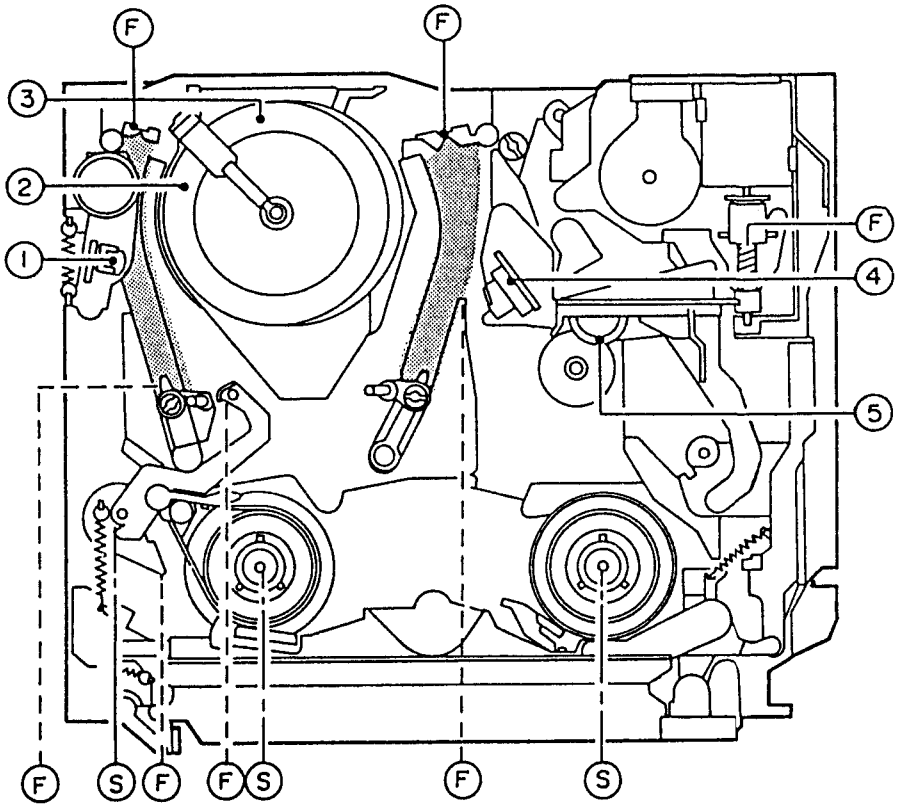


Fig. 2 Top View of Mechanism

Phenomenon	Inspection Location	Replacement
Does not fast fast forward or rewind, or rotation is slow	Dirt on reel belt	○
Tape does not run		
Slack tape		

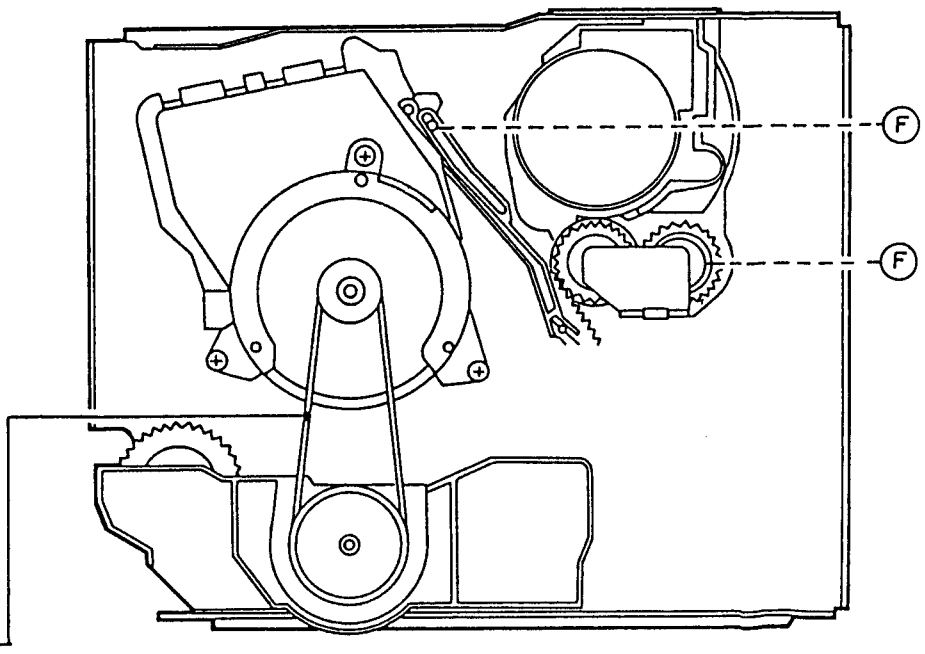


Fig. 3 Bottom View of Mechanism

Note:
If locations marked with "o" do not operate normally after cleaning, they are worn. Replace.
See the EXPLODED VIEWS at the end of this manual as well as the above illustrations for the sections to be lubricated and greased.

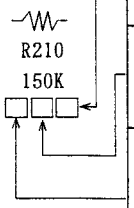
Ⓢ : Sonic Slidas oil (oil locations)
Ⓕ : Froil (grease locations)

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

[RESISTORS]

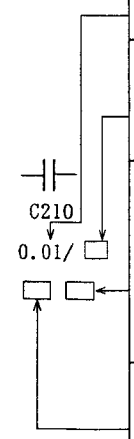


Value	No indication ····· ohm K ····· kohm
Tolerance	No indication ····· ± 5% K ····· ±10% M ····· ±20%
Power capacitance	No indication ····· 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted.)
Type	No indication ····· Carbon film fixed RC ····· Carbon solid RW ····· Power-type wirewound solid RS ····· Metal oxide film solid RN ····· Metal film solid

Example

R210
150K ····· 150 kohm, carbon solid
RC.1/2.K 1/2W, ±10%

[CAPACITORS]



Value	No indication ····· μF P ····· PF
Dielectric resistance	No indication ····· 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
Tolerances	No indication ····· ±10% J ····· ± 5% M ····· ±20% C ····· ±0.25PF Z ····· +80%-20% (No indication with electrolytic capacitors. (excluding tantalum and high stability electrolytic capacitors.)
Type	No indication ··· Ceramic, general electrolytic (see circuit symbol to distinct from ceramic.) MYL ····· Mylar (Polyester film) STY ····· Styrol TA ····· Tantalum KU ····· High stability electrolytic MP ····· Metalized paper

Example

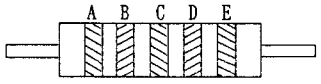
C210
0.01/25 ····· Mylar, 0.01μF, 25WV
MYL.J ±5%

2. Markings in Schematic and Circuit Board Diagrams

(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
(2) Parts with marks "●" attached to circuit numbers in the schematic and circuit board diagrams are chip components.
(3) Parts with marks Ⓩ in the circuit board diagrams are leadless jumpers.

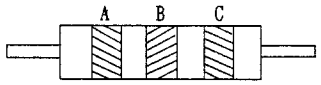
3. How to Read Capacitance of Resistance-Type Capacitors and Coils

[CAPACITOR]



CAPACITY : (10A+B)×C (PF)
TOLERANCE : D
RATED VOLTAGE : BODY COLOR
PINK : 25V
GREEN : 50V
CHARACTERISTICS : E

[COIL]



INDUCTANCE : (10A+B)×C (μH)

COLOR	A, B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Gray	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	± 5%	
Silver		10^{-2}	±10%	High dielectric constant type

4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
(3) The human body and clothes made of synthetic fibers or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.

SERVICE MANUAL ABBREVIATION LIST

A	
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADC B-Y	Analog to Digital Converted B-Y Signal
ADC R-Y	Analog to Digital Converted R-Y Signal
ADC Y	Analog to Digital Converted Luminance
ADD	Adder
ADRS	Address
A.DUB	Audio Dub
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
ALC	Automatic Level Control
AM	Amplitude modulation
AMP	Amplifier
APC	Automatic Phase Control
ASBL	Assemble (Phase Matching)
AUD.	Audio
AUX	Auxiliary
B	
BATT.	Battery
BG	Burst Gate or Back Ground
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF High Band
BL	Power Supply for Selecting VHF Low Band
BM	Power Supply for Selecting VHF Mid Band
BPF	Band-pass Filter
BS	Power Supply for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BUF.	Buffer Amplifier
C	
C	Chroma
CAPST.	Capstan
CAS	Column Address Strobe
CARR.	Carrier
CATV	Cable TV
C.BLANK	Chroma Blanking
CCD	Charge Coupled Device
C.FG/CFG	Capstan Frequency Generater
CH	Channel
CHAR.	Character
C.MEMORY	Counter Memory
CNR	Chroma Noise Reducer
COM.	Common
COM.	Composite
COMPA	Comparator
COMPE	Compensator
COMP-EXP	Compressor-Expander
CONV.	Converter
CORR.	Correlation
COUNT.	Counter
C.PAUSE	Camera Pause
C/R	Capacitor/Resistor
C.RESET	Counter Reset
C.REVERSE	Count Reverse
CST	Cassette
C.SYNC	Composite Synchronizing Signal
CTL	Control Track Pulse
CYL	Cylinder
D	
DA	Double Azimuth
D/A	Digital to Analog
D-D	Direct Drive
DEEMPH.	Deemphasis
DEMOD.	Demodulator
DEMPX	Demultiplexer
DET	Detector
DISCRI.	Disciminator
DISP.	Display
DL	Delay Line
DN	Down
DO	Dropout

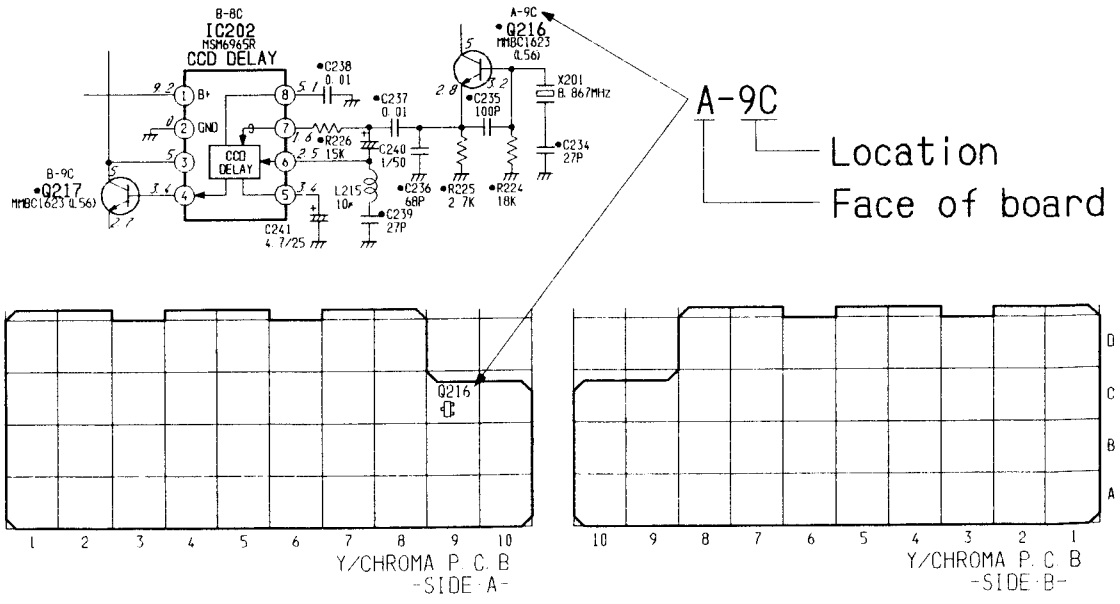
D	
DOC	Dropout Compensator
DRAM	Dynamic Random Access Memory
D.REF 25	Delayed Reference 25Hz
D.SW 25	Delayed Switching 25Hz
DT/OE	Data Transfer/Output Enable
D/W	Dark/White
DWC	Delayed Write Clock
E	
EA-ROM	Electrically Alterable Read Only Memory
E-E	Electronic-to-Electronic
EMPH	Emphasis
EQ	Equalizer
EXT.	External
F	
F.ADV	Frame Advance
FB	Feed Back
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FM	Frequency Modulation
FREQ.	Frequency
Fsc	Color Sub Carrier Frequency
FWD	Forward
G	
GEN	Generator
GND	Ground
H	
H	Horizontal
HD	Horizontal Drive
Hi-Fi	High Fidelity
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
IF	Intermediate Frequency
INC	Row Counter Increment
INDI.	Indicator
INT.	Internal
INV.	Inverter
I/O	In/Out (Input/Output)
IR	Infrared Rays
IRT	Instant Recording Timer
L	
LCD	Liquide Crystal Display
LIN.	Linear
LM	Loading Motor
LNC	Line Noise Canceller
LOG	Logarithm
LP	Long Play
LPF	Low-pass Filter
L/R	Left/Right
M	
M.BRAKE	Main Brake
M.CUT	Monitor Cut
MEM.	Memory
MEM ON	Memory ON
MEM SW	Memory Switch
MEM VIDEO	Memorized Video
MIX	Mixer
MM	Monostable Multivibrator
MOD.	Modulator
MPX	Multiplex
MPX VIDEO	Multiplexed Video
M.STATE	Mechanism State
M.STOP	Memory Stop
MTS	Multi Channel Television Soun
N	
NF	Negative Feed Back
NORM. or NOR.	Normal
NR	Noise Reduction

O	
O/E	Odd/Even Field
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
P.CONT	Power Control
PIF	Picture Intermediate Frequency
P IN P	Picture in Picture
PIX MOVE	Picture Move
PLL	Phase Locked Loop
POS.	Positive
PROG.	Program
PROTECT.	Protector
PWM	Pulse Width Modulation
R	
RAM	Randum Access Memory
RAS	Row Address Strobe
RC	Reading Clock
RCC	Reading Clock Clear
RCR	Row Counter Reset
REC	Record
RECT.	Rectifier
REF	Reference
REF 25	Reference 25Hz from servo circuit
REG	Regulator
REL	Refresh Control
REW	Rewind
REV	Reverse
RF	Radio Frequency
RM	Reel Motor
ROM	Read Only Memory
S	
SAP	Second Audio Program
SAW	Sawtooth
SC	Serial Control
SEP.	Separator
SG	Signal Generator
S/H	Sample and Hold
SIF	Sound Intermediate Frequency
SP	Standard Play
S.REEL	Supply Reel Sensor

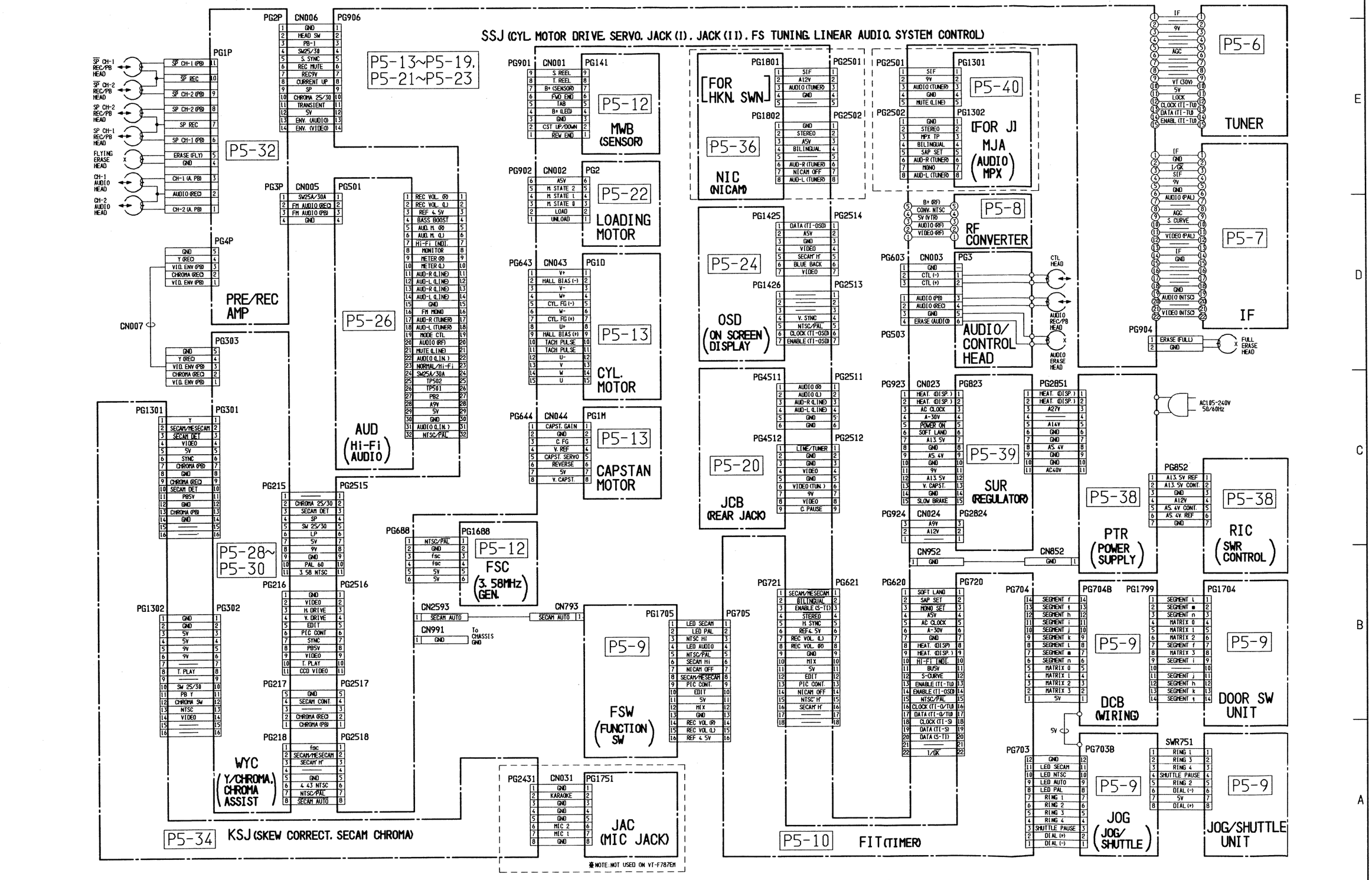
	S
SRCH	Search
SRV	Servo
S.TRACK	Slow Tracking
S-VHS	Super VHS
SW 30Hz	Head Switching Pulse
SYNC	Synchronizing signal
SYS.CON	System Control
T	
T.BRAKE	Take-up Brake
T/L	Tuner/Line
TP	Test Point
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TRS	Transfer
TμP	Timer Microprocessor
TU-μP	Tuning Microprocessor
U	
U/D	Up/Down
UNI.	Unified
V	
V	Vertical
VAR	Variable
VCA	Voltage Controlled Amplitier
VCO	Voltage Controlled Oscillator
V.DRV	Vertical Drive Pulse
V.DUB	Video Dub
VHS	Video Home Systems
VOL.	Volume
V-REF	Voltage Reference
VSS	Vertical Sync. Separator
Vss	Voltage Super Source
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
W	
WC	Write Clock
WCC	Write Clock Clear
WE	Weighting
Y	
Y/C	Luminance/Chrominance

[Indications of semiconductor locations]

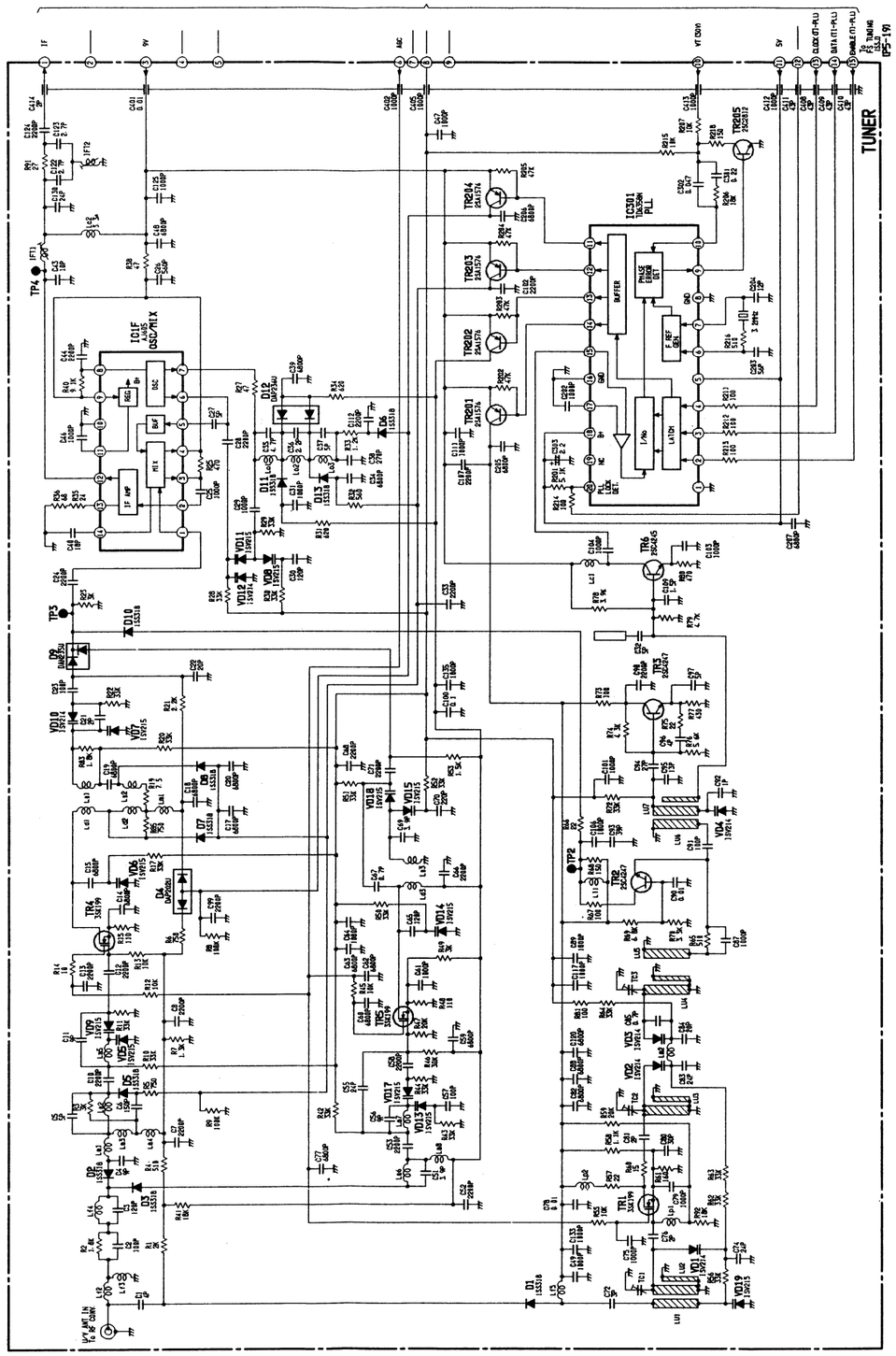
The locations of semiconductors (ICs, transistors, diodes, etc.) are shown in the schematic diagrams in this service manual. Use the indications to locate the parts on the circuit boards.



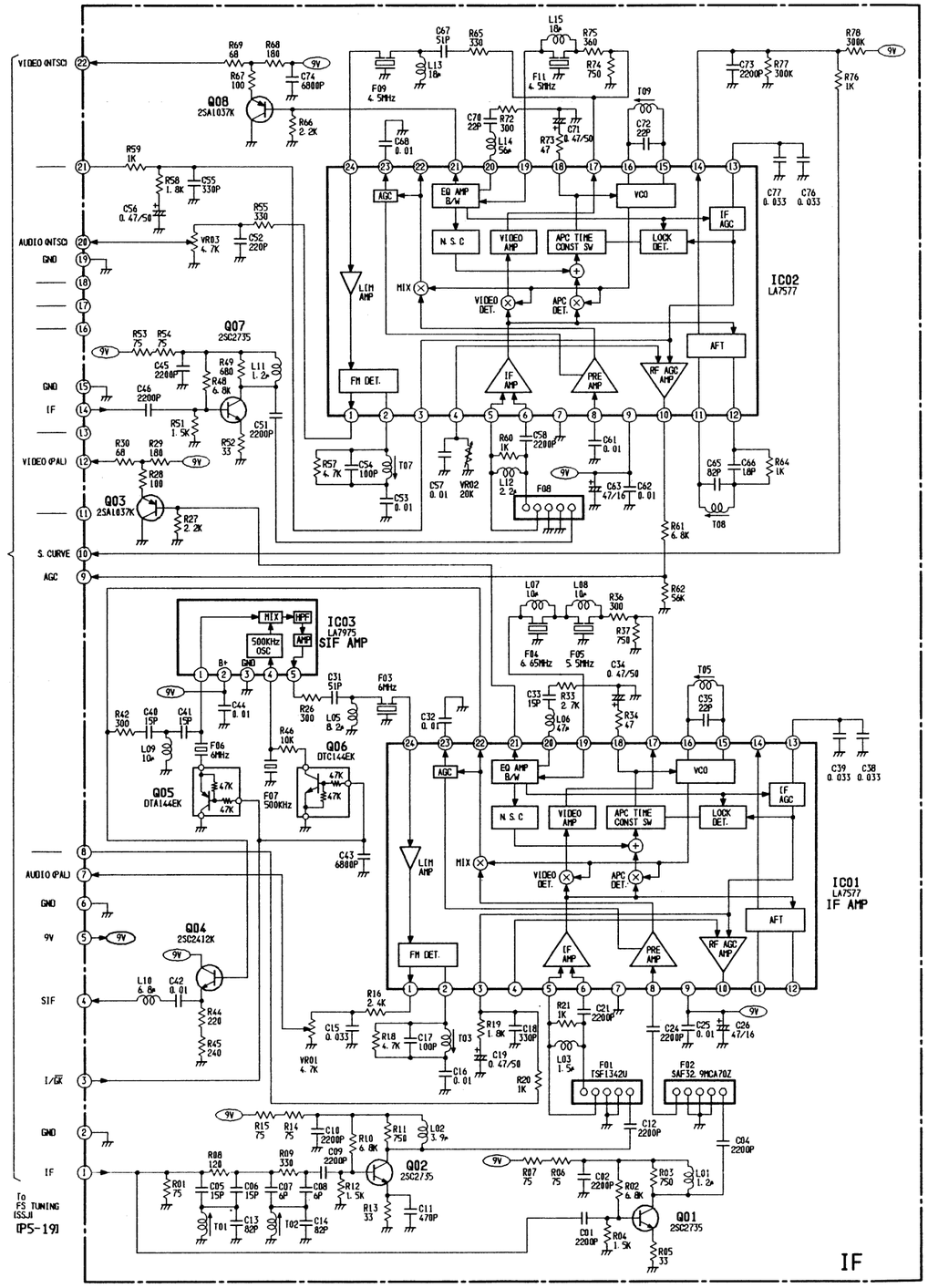
INTERNAL WIRING DIAGRAM



TUNER SCHEMATIC DIAGRAM



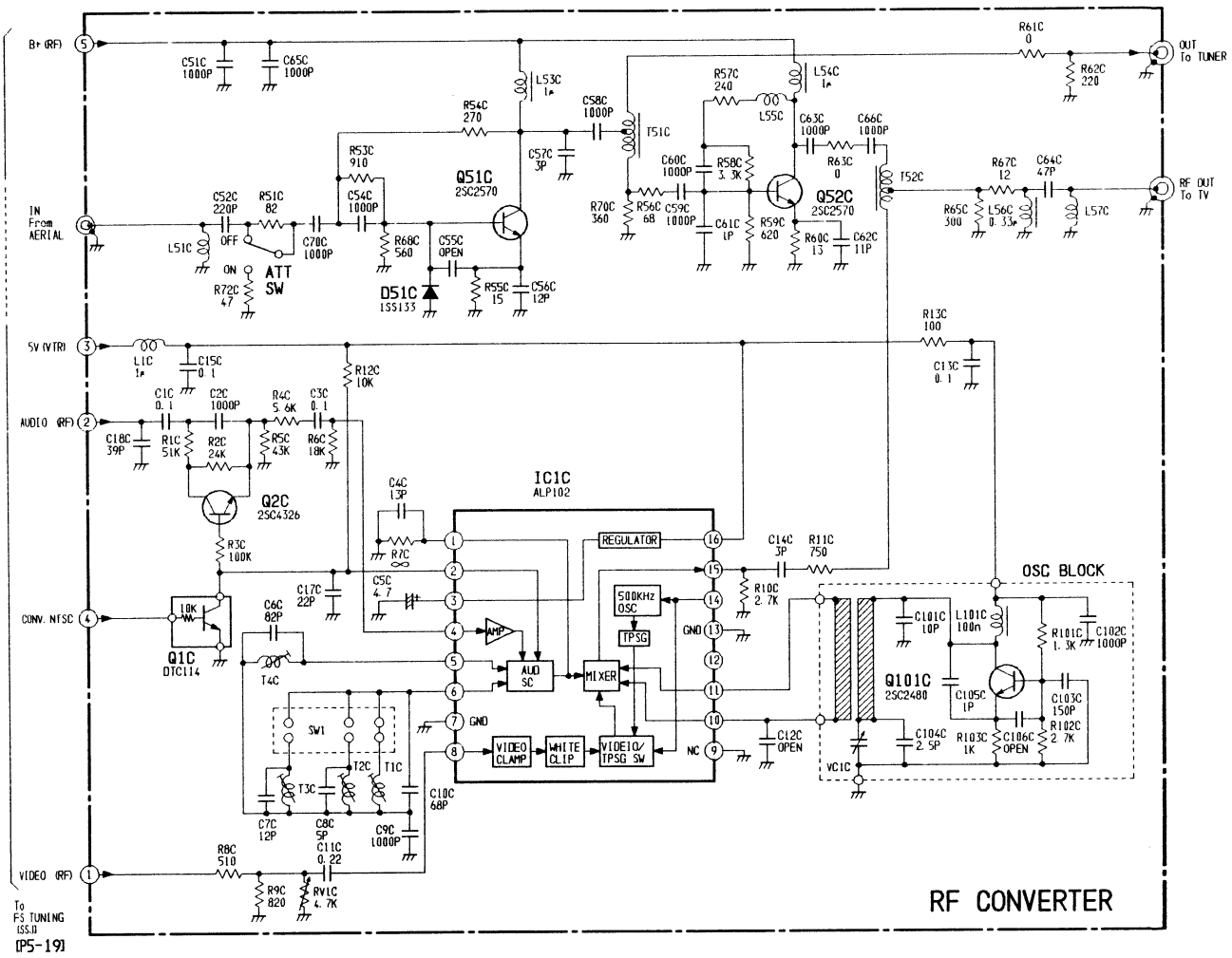
IF SCHEMATIC DIAGRAM



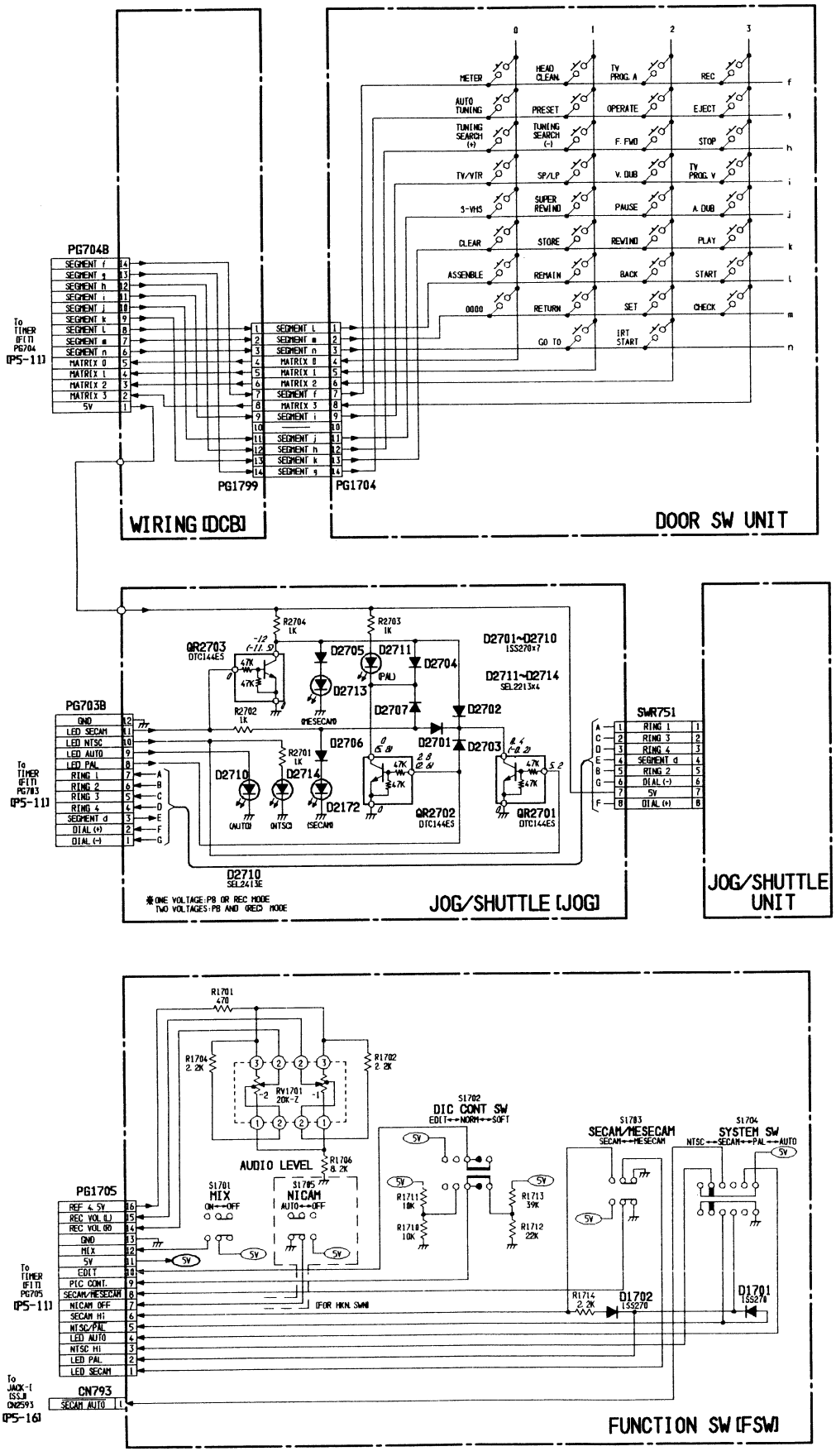
1 2 3 4 5 6 7 8

TUNER 5-6 5-7 IF

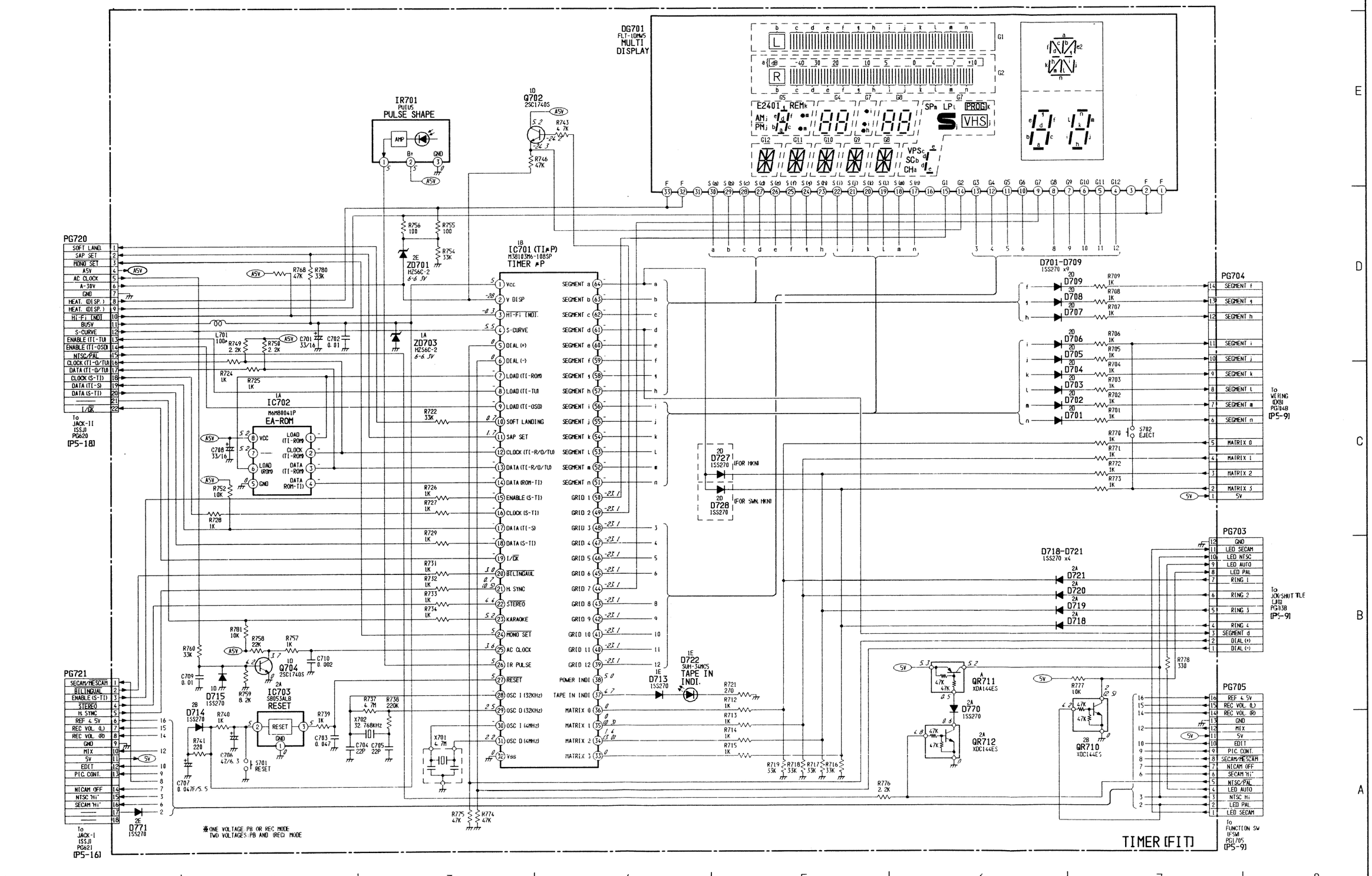
RF CONVERTER SCHEMATIC DIAGRAM



WIRING (DCB) /DOOR SW. JOG/SHUTTLE (JOG). FUNCTION SW (FSW) SCHEMATIC DIAGRAM



TIMER (FIT) SCHEMATIC DIAGRAM

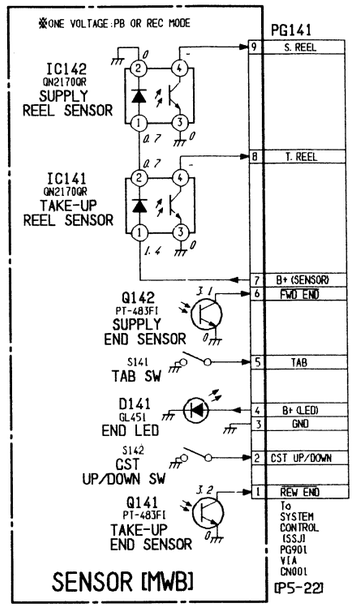


TIMER 5-10 5-11 TIMER

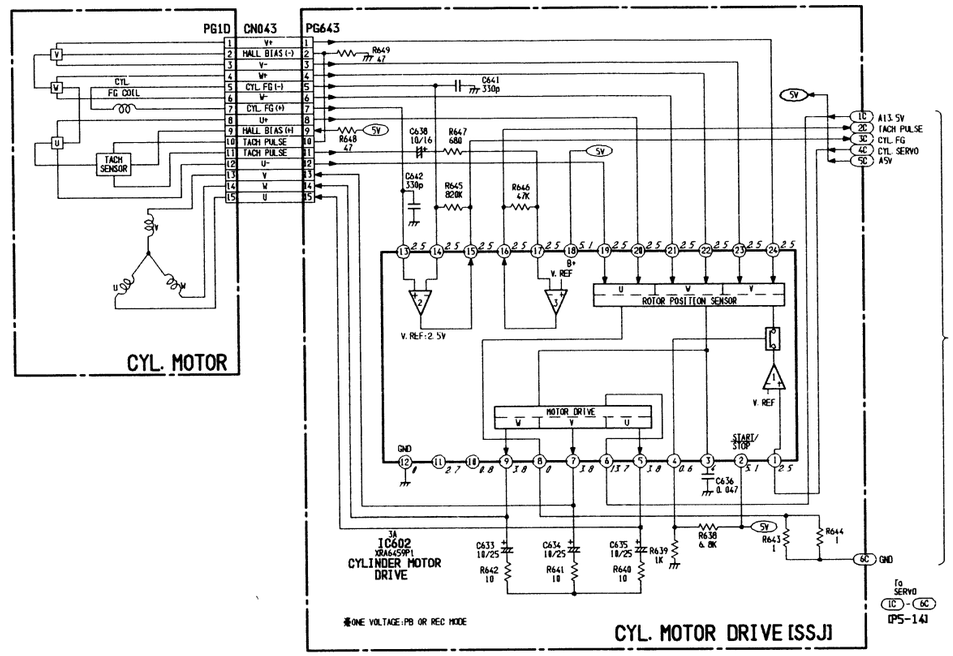
SERVO WAVEFORMS

1-B IC601-1 5.0Vp-p 1V/5.0m sec cm PLAY	2-A IC601-6 2.5Vp-p 0.5V/2.0m sec cm REC/PLAY	3-A IC601-7 3.3Vp-p 0.5V/10.0m sec cm REC/PLAY	4-A IC601-9 3.4Vp-p 1V/2.0m sec cm REC/PLAY
5-A IC601-29 4.1Vp-p 1V/10.0m sec cm REC	6-A IC601-30 2.6Vp-p 1V/10.0m sec cm REC	7-B IC601-34 1.7Vp-p 0.5V/10.0m sec cm PLAY	8-B IC601-35 1.7Vp-p 0.5V/10.0m sec cm PLAY
9-B IC601-36 1.7Vp-p 0.5V/10.0m sec cm PLAY	10-A IC601-39 5.0Vp-p 1V/10.0m sec cm REC/PLAY	11-A IC601-42 620mVp-p 0.2V/2.0μ sec cm REC/PLAY	12-A IC601-45 5.1Vp-p 1V/10.0m sec cm REC/PLAY
13-A IC601-46 5.1Vp-p 1V/10.0m sec cm REC/PLAY	14-A IC601-50 4.3Vp-p 1V/20.0μ sec cm REC/PLAY	15-A IC601-55 5.1Vp-p 1V/500μ sec cm REC/PLAY	

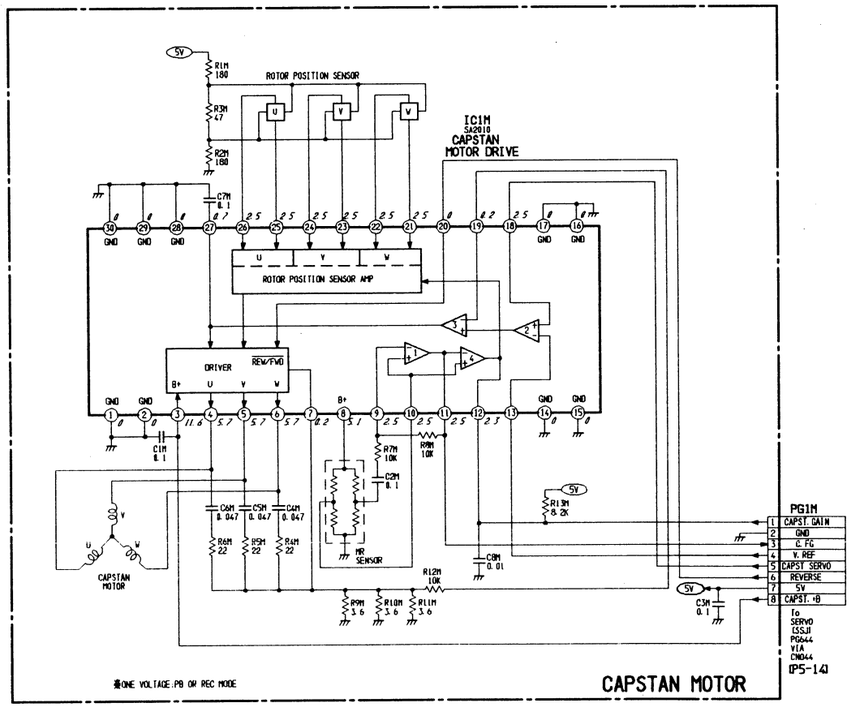
SENSOR (MWB) SCHEMATIC DIAGRAM



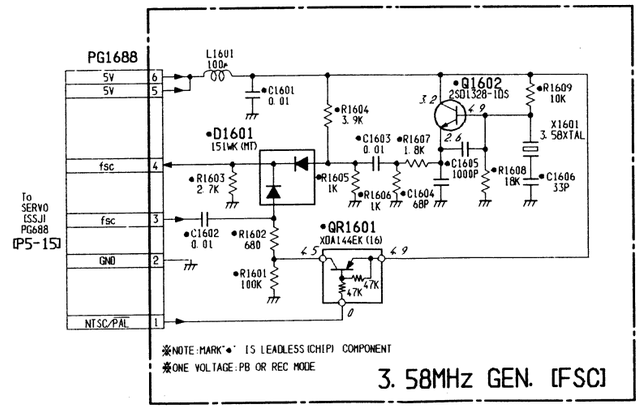
CYL. MOTOR DRIVE (SSJ) SCHEMATIC DIAGRAM



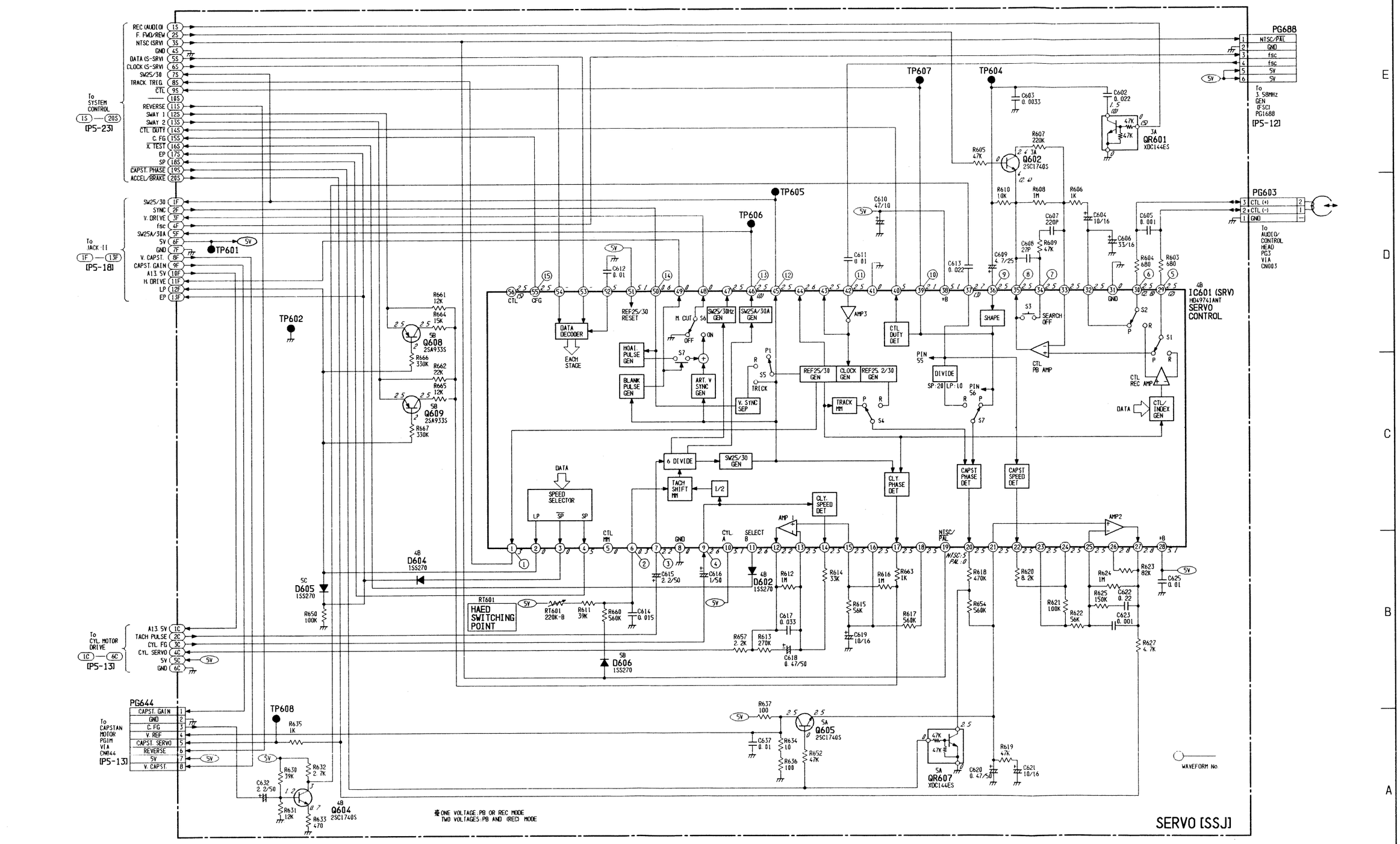
CAPSTAN MOTOR SCHEMATIC DIAGRAM



3.58MHz GEN. (FSC) SCHEMATIC DIAGRAM

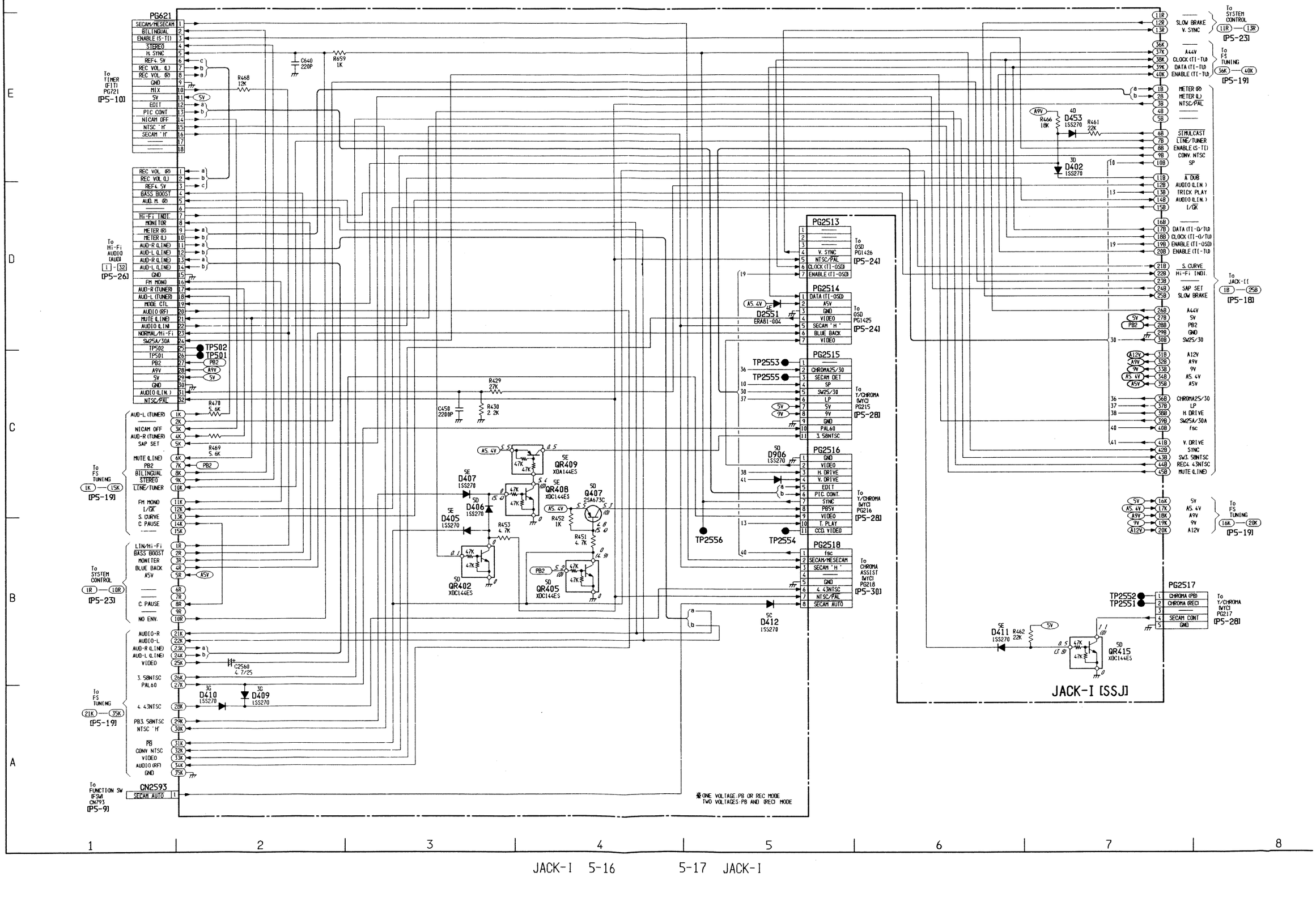


SERVO (SSJ) SCHEMATIC DIAGRAM

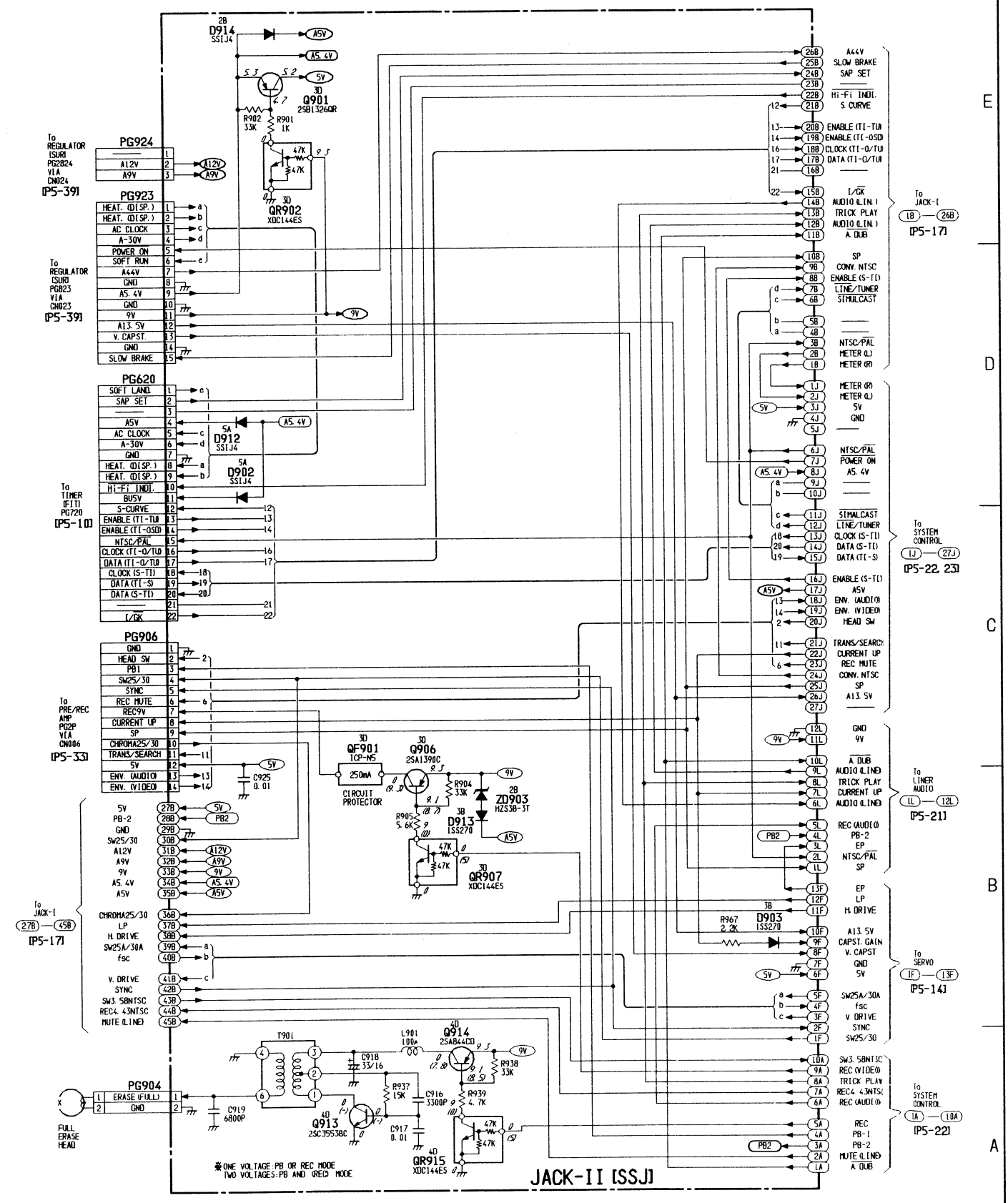


SERVO 5-14 5-15 SERVO

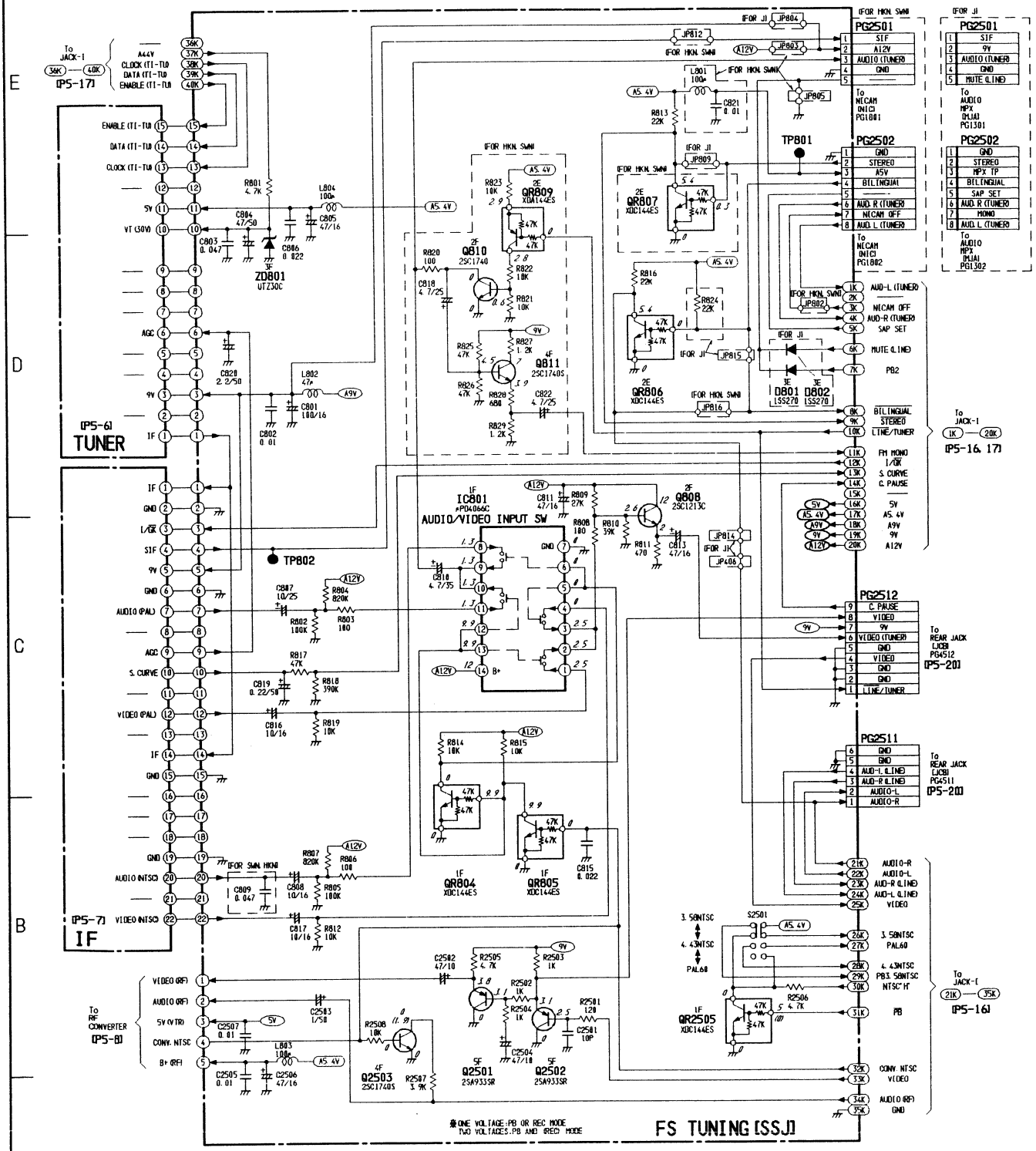
JACK-I (SSJ) SCHEMATIC DIAGRAM



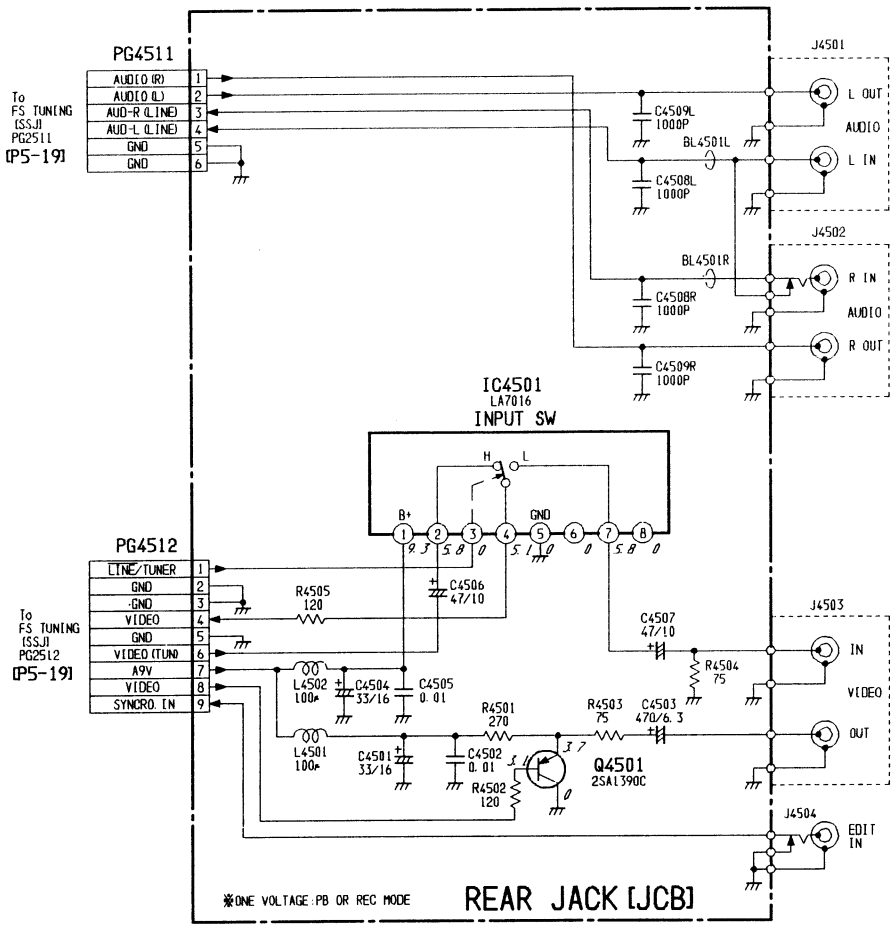
JACK-II (SSJ) SCHEMATIC DIAGRAM



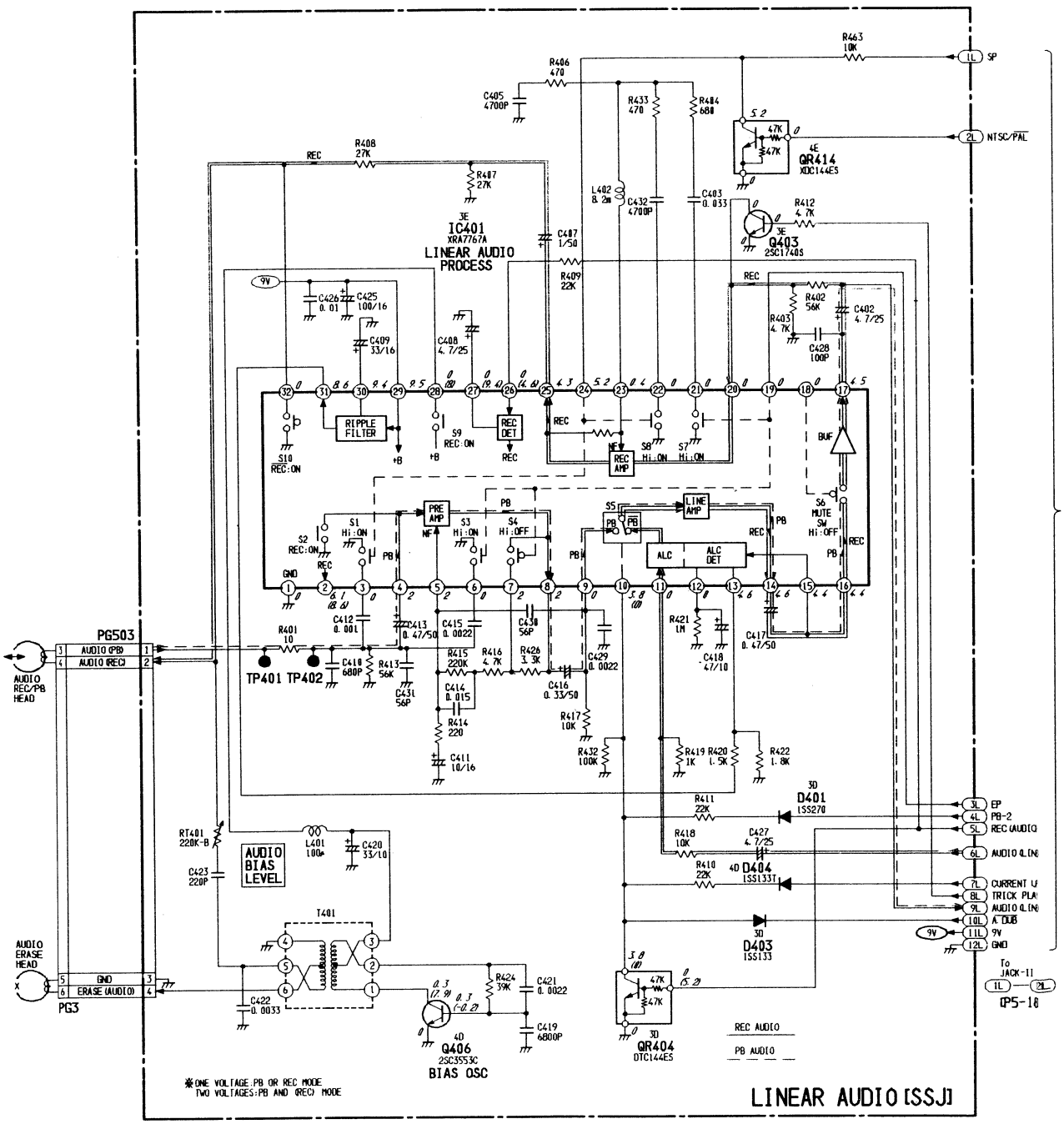
FS TUNING (SSJ) SCHEMATIC DIAGRAM



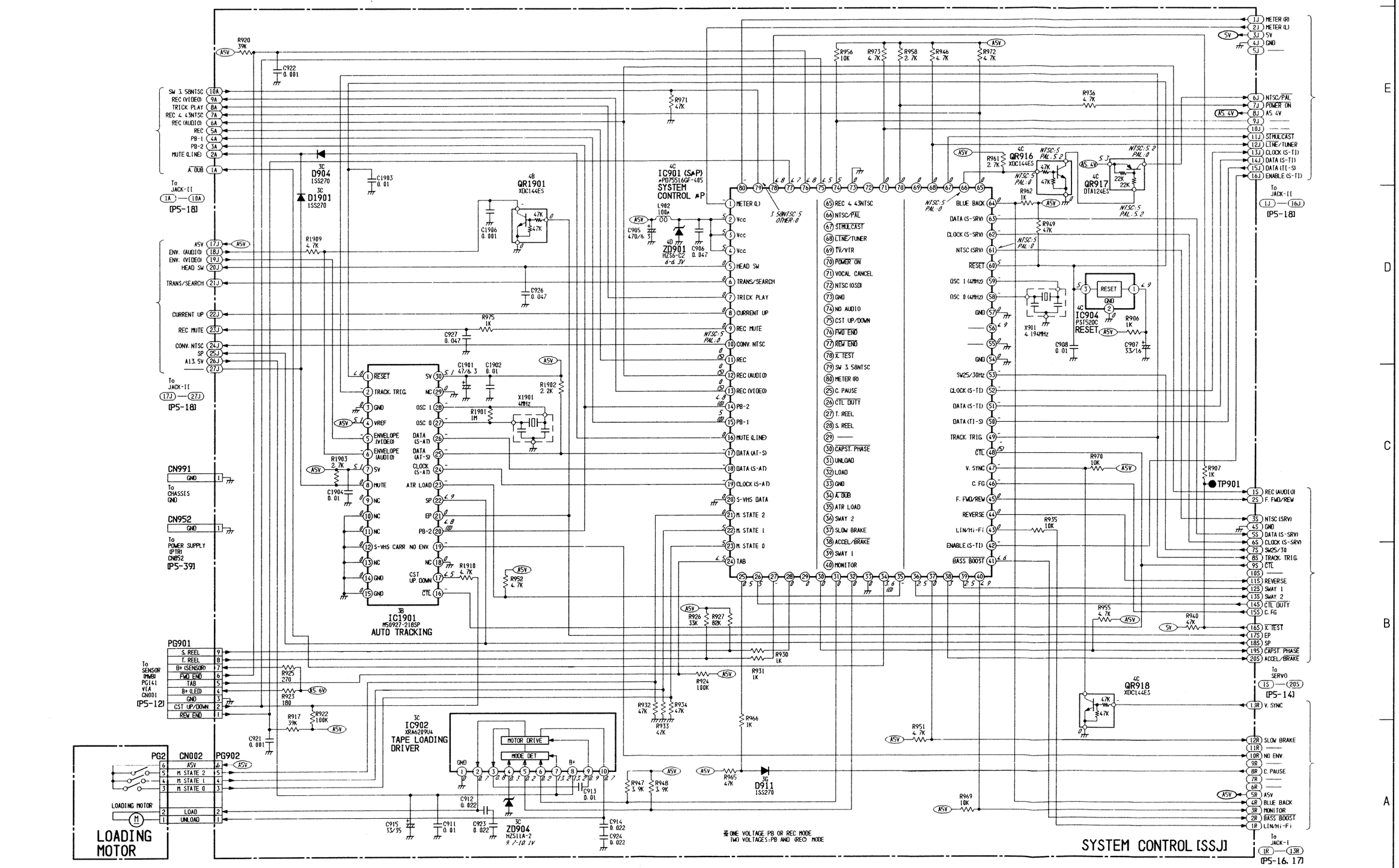
REAR JACK (JCB) SCHEMATIC DIAGRAM



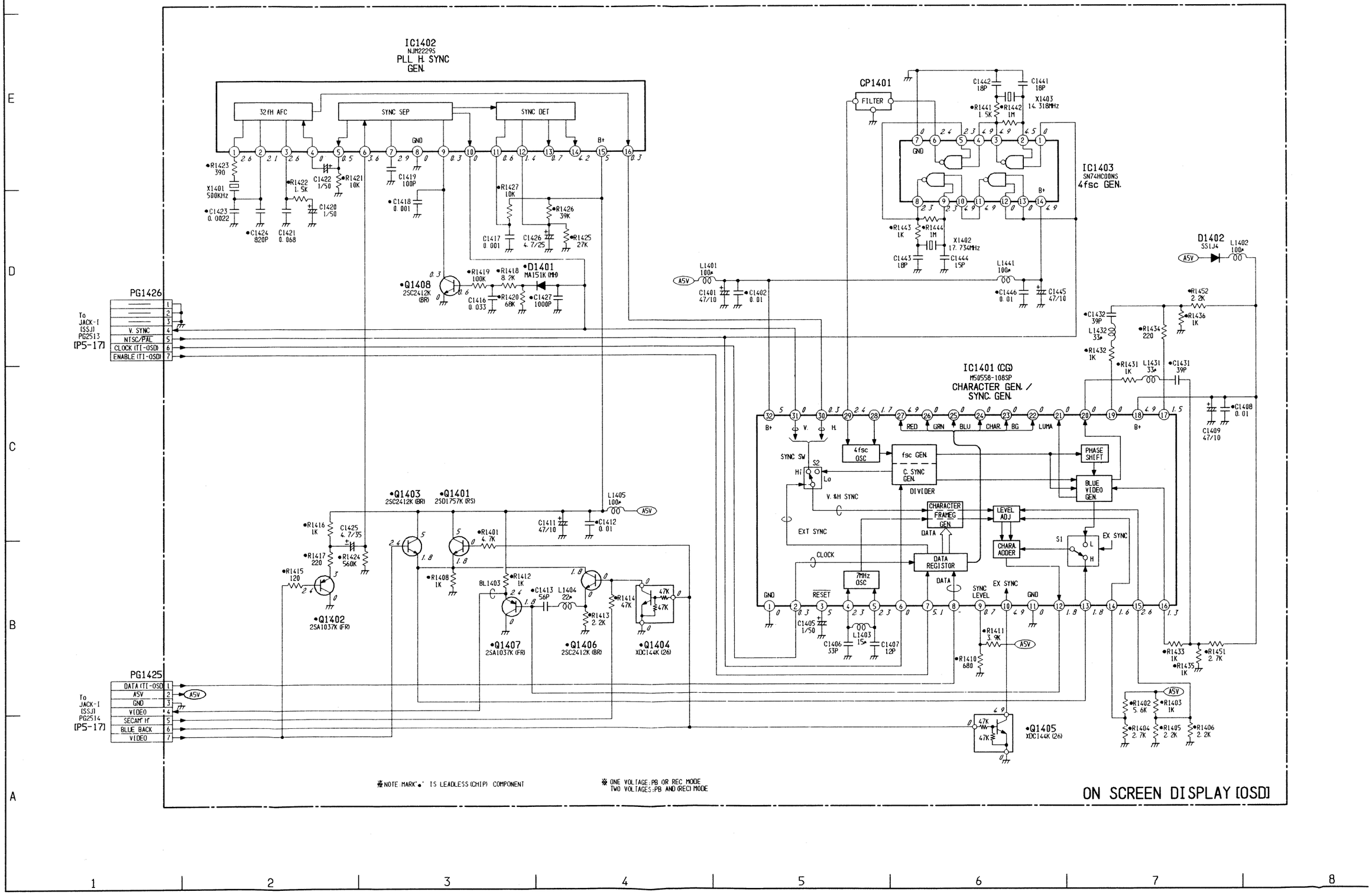
LINEAR AUDIO (SSJ) SCHEMATIC DIAGRAM



SYSTEM CONTROL (SSJ) SCHEMATIC DIAGRAM



ON SCREEN DISPLAY (OSD) SCHEMATIC DIAGRAM

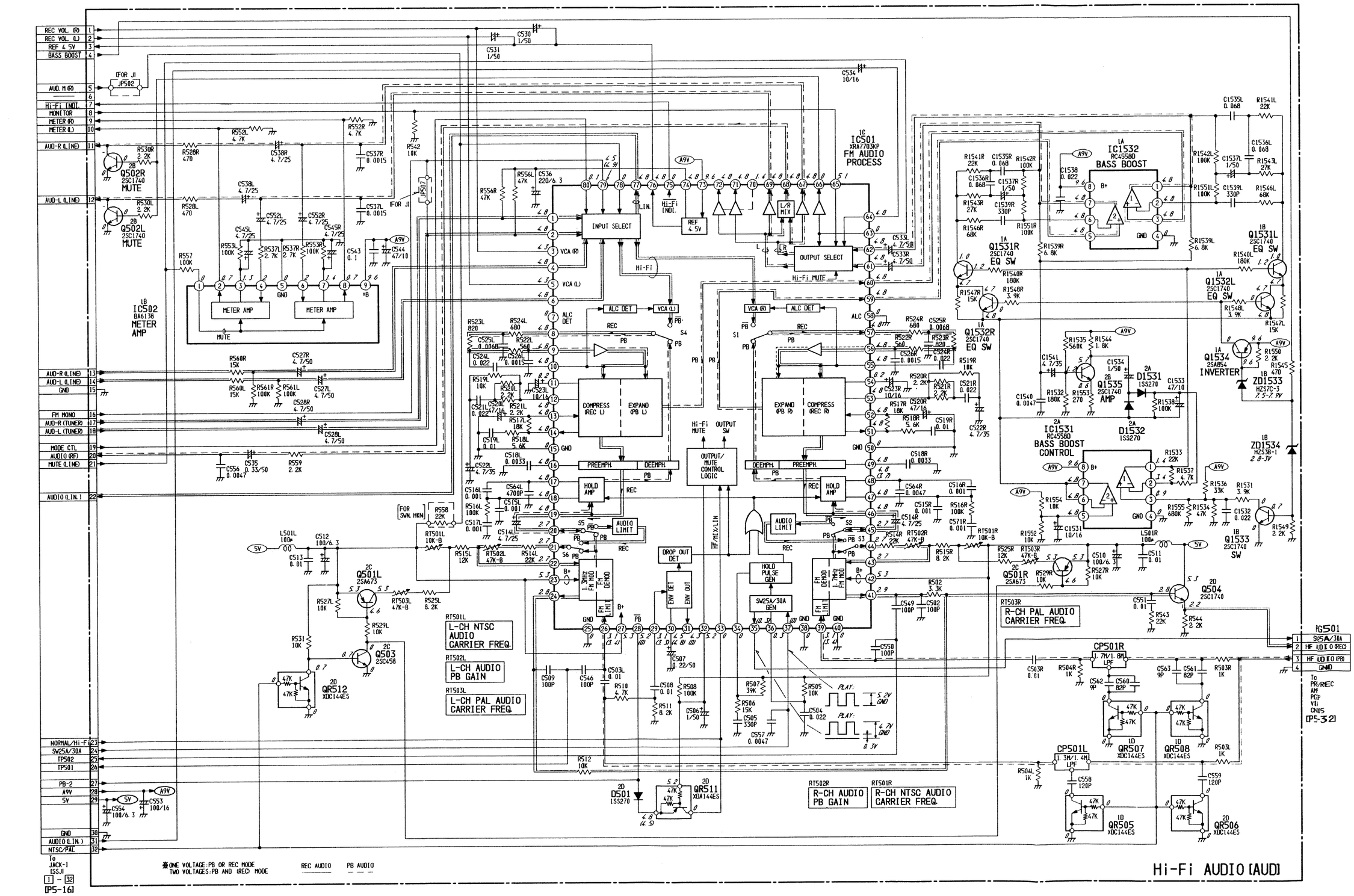


※NOTE:MARK"•" IS LEADLESS(CHIP) COMPONENT

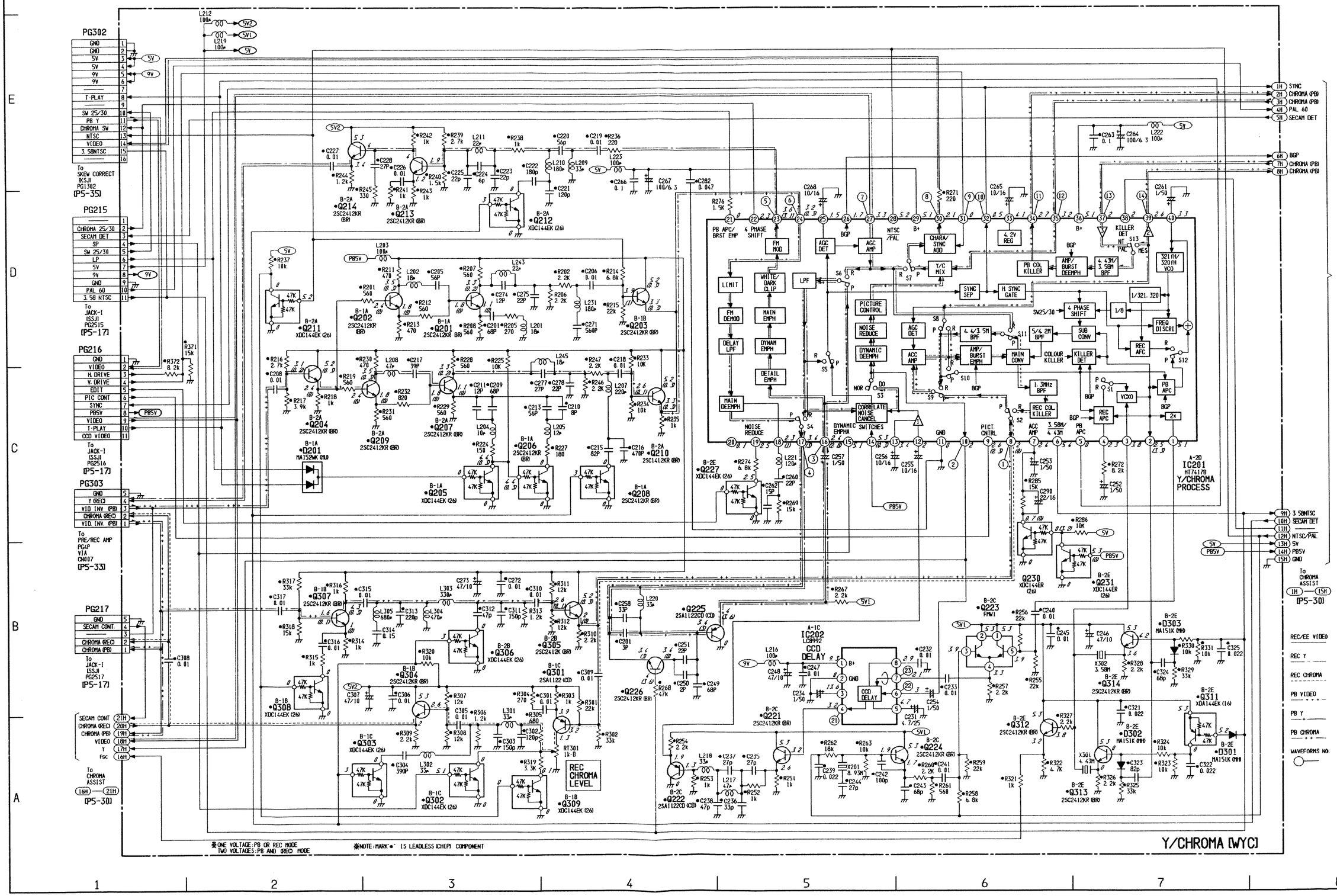
※ ONE VOLTAGE:PB OR REC MODE
TWO VOLTAGES:PB AND(REC) MODE

ON SCREEN DISPLAY [OSD]

Hi-Fi AUDIO (AUD) SCHEMATIC DIAGRAM

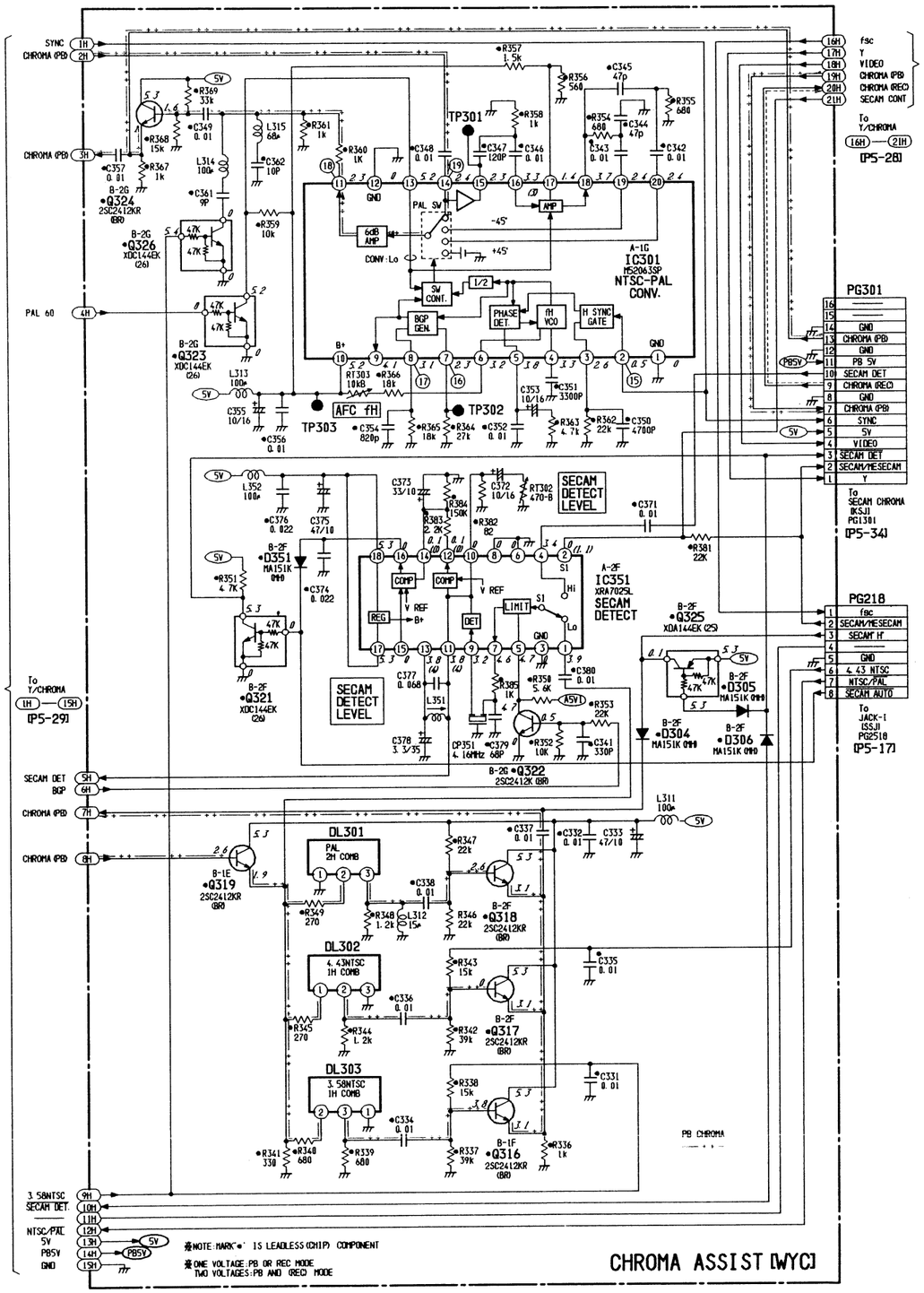


Y/CHROMA (WYC) SCHEMATIC DIAGRAM



Y/CHROMA 5-28 5-29 Y/CHROMA

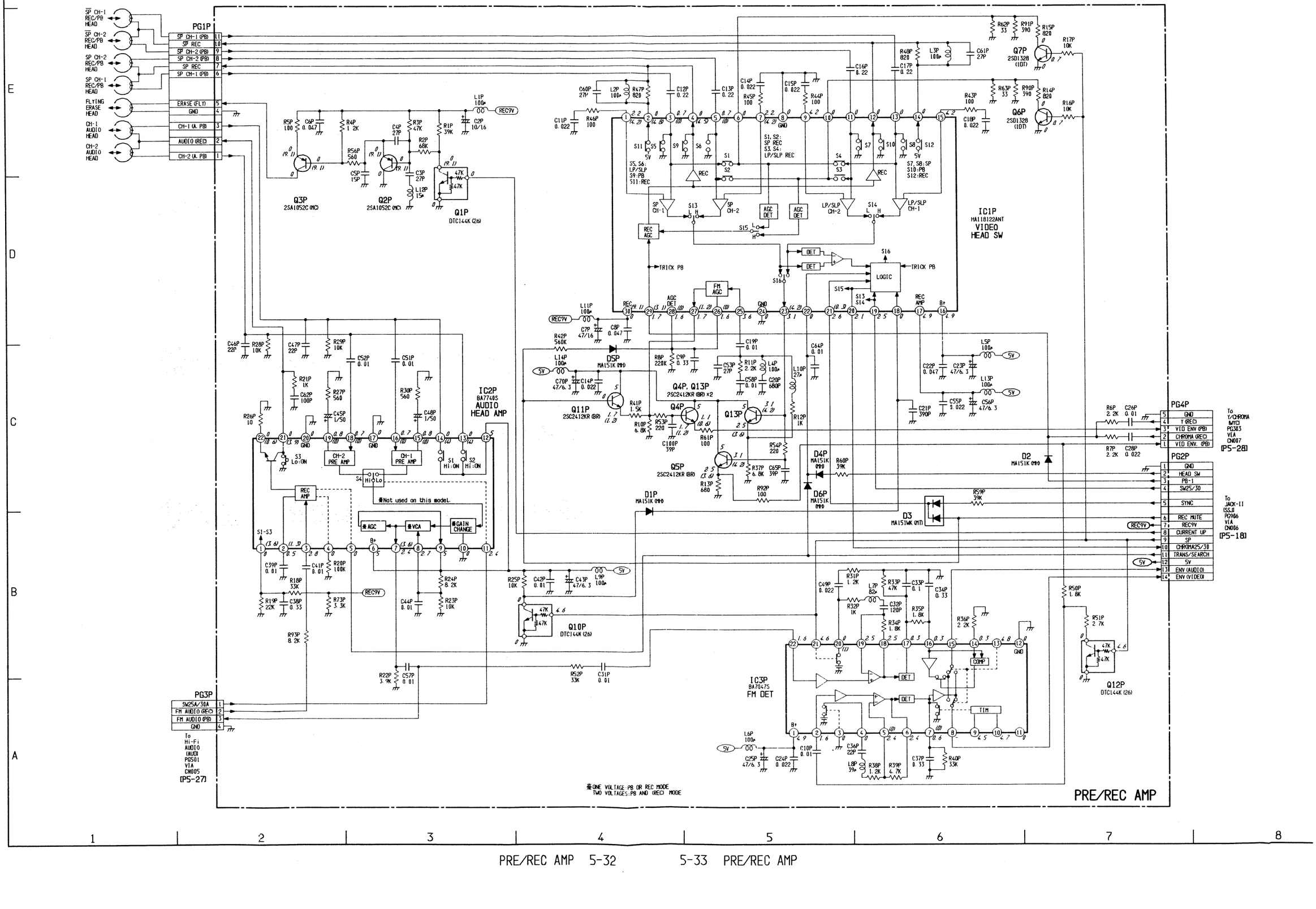
CHROMA ASSIST (WYC) SCHEMATIC DIAGRAM



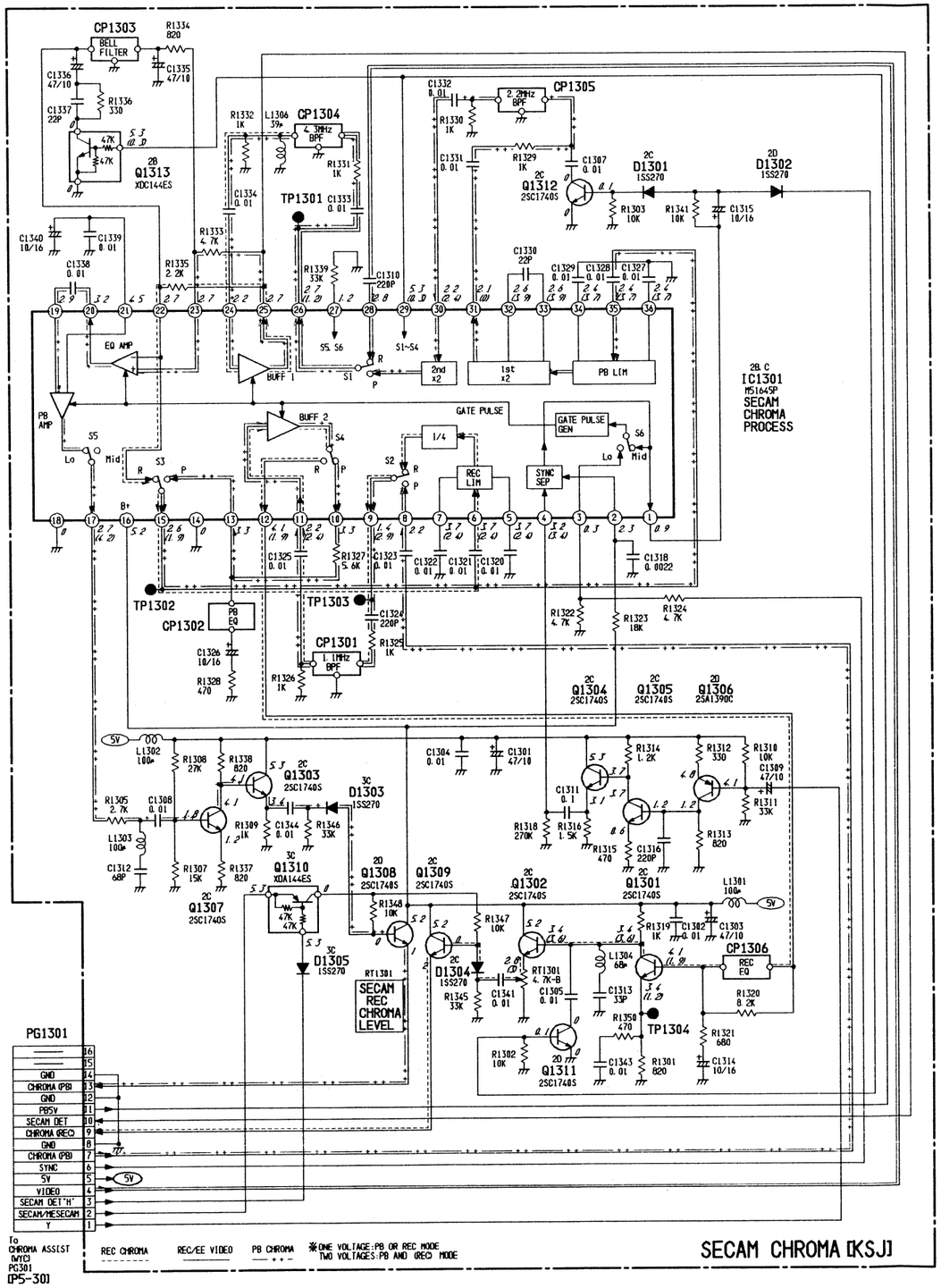
Y/CHROMA WAVEFORMS

1-A [C201-8 370mVp-p 0.1V/20.0μsec. cm REC]	1-B [C201-8 150mVp-p 50mV/20.0μsec. cm PLAY]	2-A [C201-10 370mVp-p 0.1V/20.0μsec. cm REC]	2-B [C201-10 370mVp-p 0.1V/20.0μsec. cm PLAY]
3-A [C201-16 470mVp-p 0.1V/20.0μsec. cm REC]	3-B [C201-16 5900mVp-p 0.2V/20.0μsec. cm PLAY]	4-A [C201-17 470mVp-p 0.1V/20.0μsec. cm REC]	4-B [C201-17 600mVp-p 0.2V/20.0μsec. cm PLAY]
5-A [C201-23 1.2Vp-p 0.5V/20.0μsec. cm REC]	6-B [C201-24 570mVp-p 0.2V/5.0msec. cm PLAY]	7-A [C201-27 1.0Vp-p 0.2V/20.0μsec. cm REC/PLAY]	8-A [C201-30 1.9Vp-p 0.5V/20.0μsec. cm REC]
8-B [C201-30 2.3Vp-p 0.5V/20.0μsec. cm PLAY]	9-A [C201-31 150mVp-p 50mV/20.0μsec. cm REC/PLAY]	10-A [C201-32 4.6Vp-p 2V/20.0μsec. cm REC/PLAY]	11-A [C201-34 360mVp-p 0.1V/20.0μsec. cm REC]
11-B [C201-34 680mVp-p 0.2V/20.0μsec. cm PLAY]	12-A [C201-35 300mVp-p 0.1V/20.0μsec. cm REC]	12-B [C201-35 540mVp-p 0.2V/20.0μsec. cm PLAY]	13-A [C201-37 170mVp-p 50mV/20.0μsec. cm REC/PLAY]
14-A [C201-39 1.1Vp-p 0.5V/20.0μsec. cm REC/PLAY]	15-A [C301-2 4.6Vp-p 2V/20.0μsec. cm REC/PLAY]	16-A [C301-7 1.9Vp-p 0.5V/20.0μsec. cm REC/PLAY]	17-A [C301-8 1.2Vp-p 0.5V/20.0μsec. cm REC/PLAY]
18-A [C301-11 700mVp-p 0.2V/20.0μsec. cm REC]	18-B [C301-11 1.3Vp-p 0.5V/20.0μsec. cm PLAY]	19-A [C301-14 370mVp-p 0.1V/20.0μsec. cm REC]	19-B [C301-14 690mVp-p 0.2V/20.0μsec. cm PLAY]

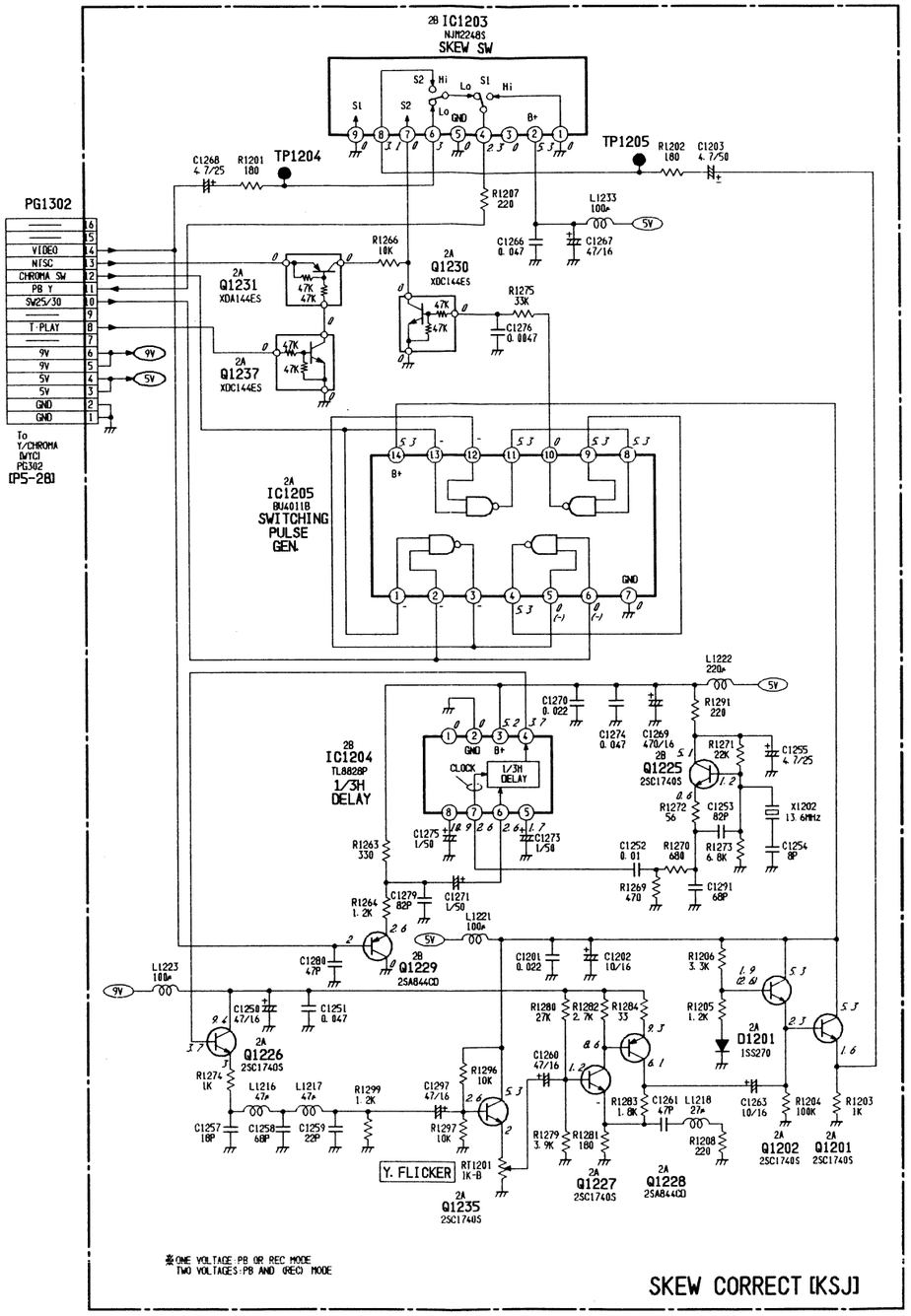
PRE/REC AMP SCHEMATIC DIAGRAM



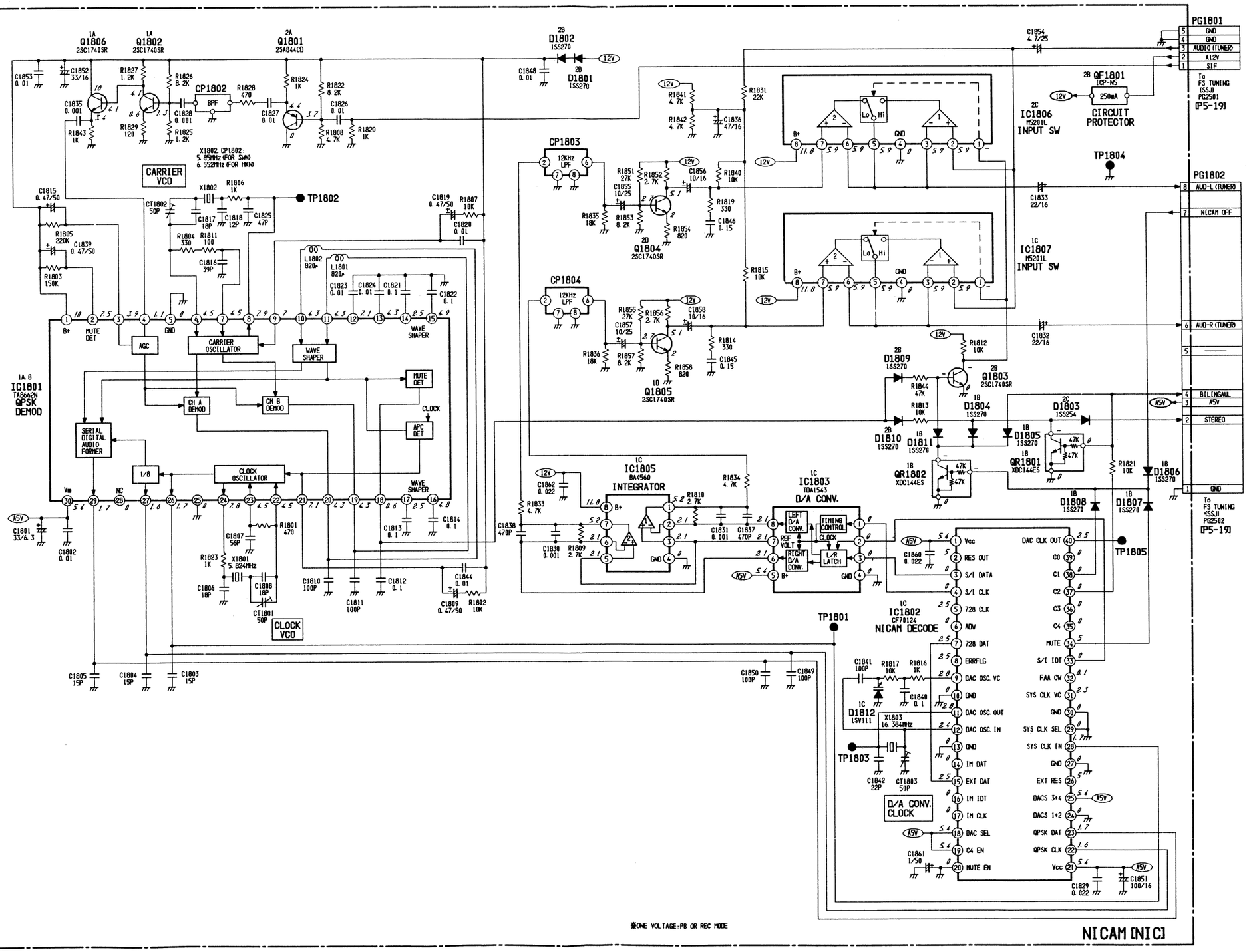
SECAM CHROMA (KSJ) SCHEMATIC DIAGRAM



SKEW CORRECT (KSJ) SCHEMATIC DIAGRAM

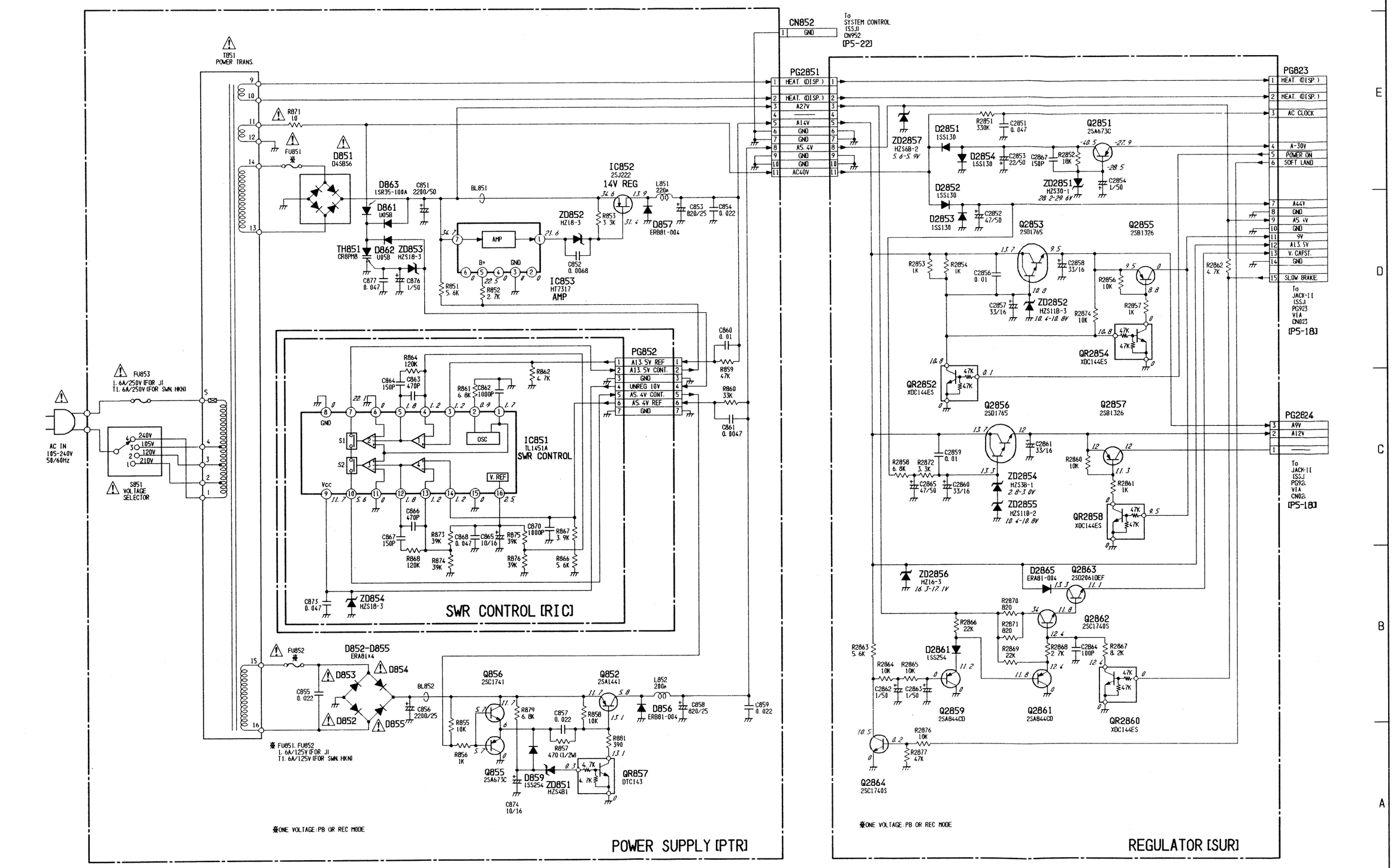


NICAM (NIC) SCHEMATIC DIAGRAM (FOR SWN, HKN)



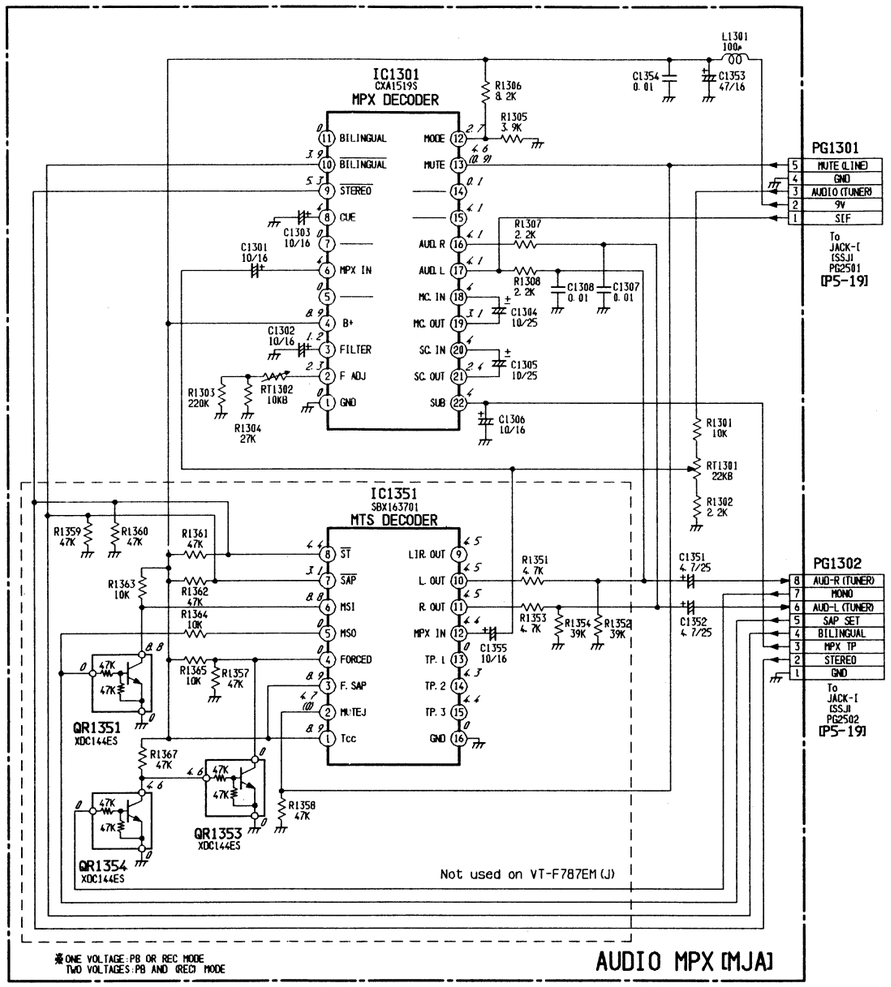
NICAM 5-36 5-37 NICAM

POWER SUPPLY (PTR) . SWR CONTROL (RIC) . REGULATOR (SUR) SCHEMATIC DIAGRAM



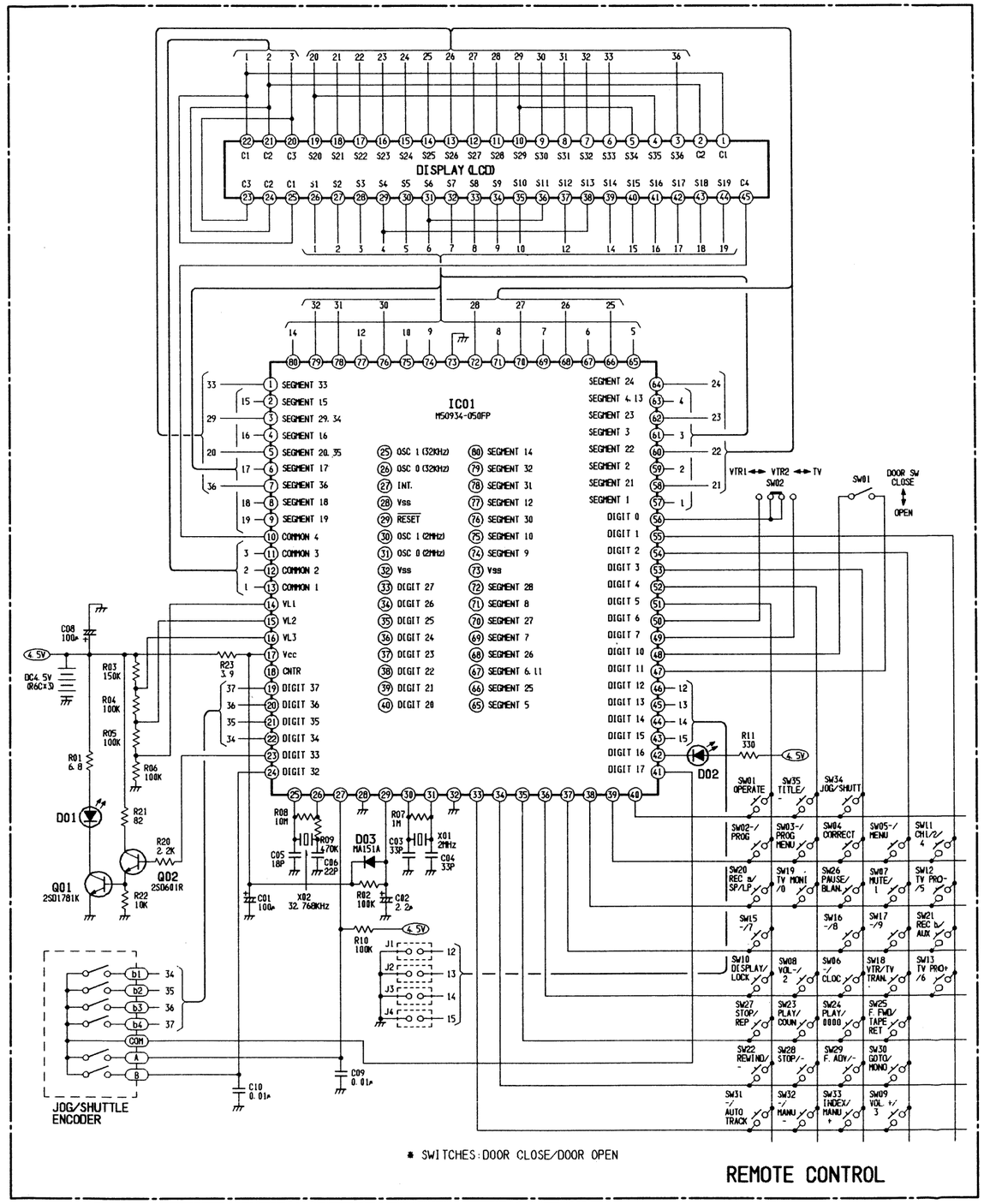
POWER SUPPLY. SWR CONTROL 5-38 5-39 REGULATOR

AUDIO MPX (MJA) SCHEMATIC DIAGRAM (FOR J)



AUDIO MPX (MJA)

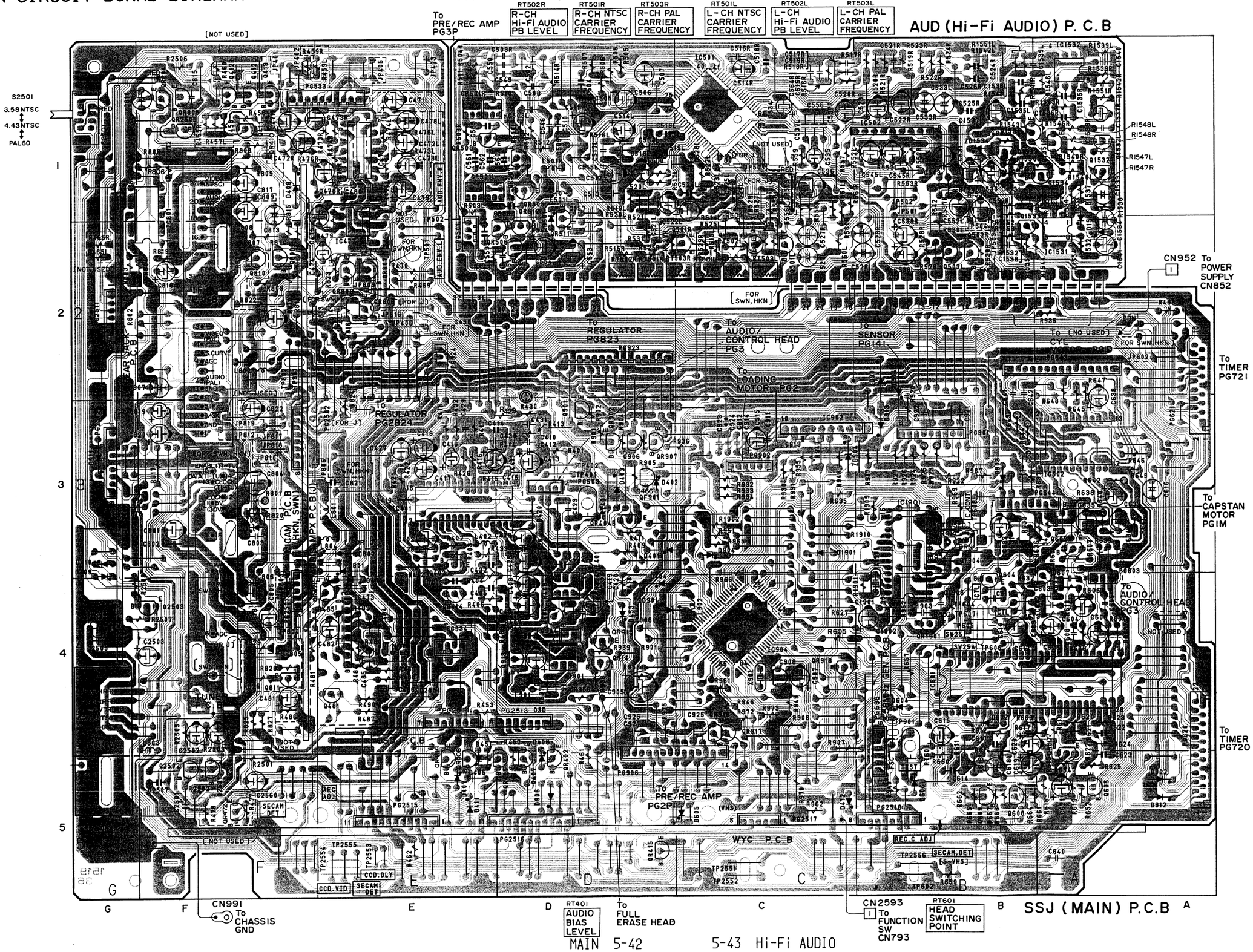
REMOTE CONTROL SCHEMATIC DIAGRAM



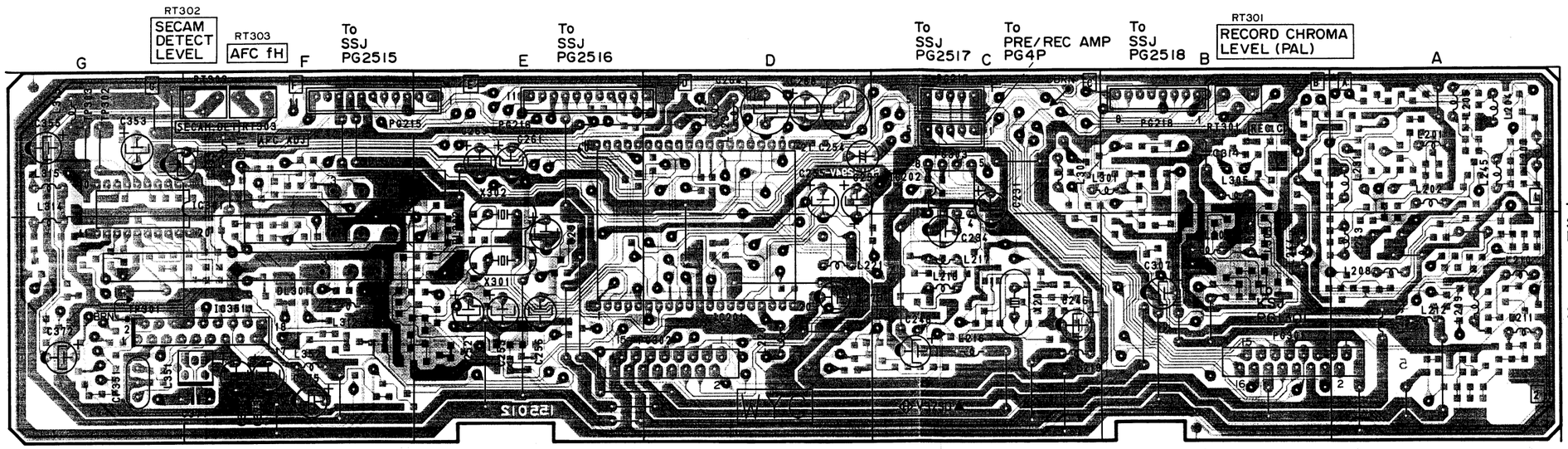
REMOTE CONTROL

MAIN CIRCUIT BOARD DIAGRAM

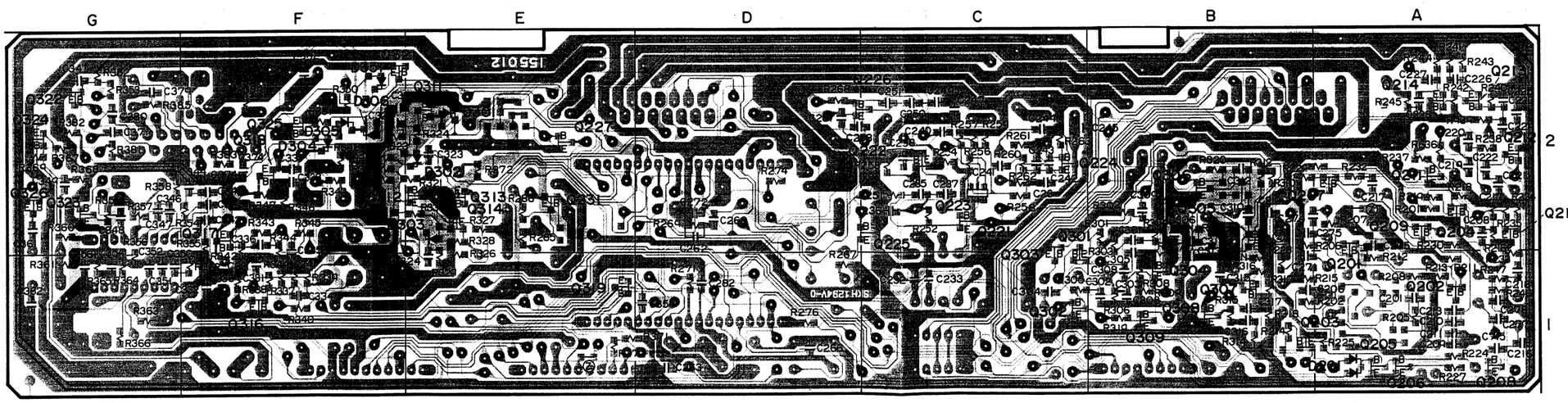
Hi-Fi AUDIO CIRCUIT BOARD DIAGRAM



Y/CHROMA CIRCUIT BOARD DIAGRAM



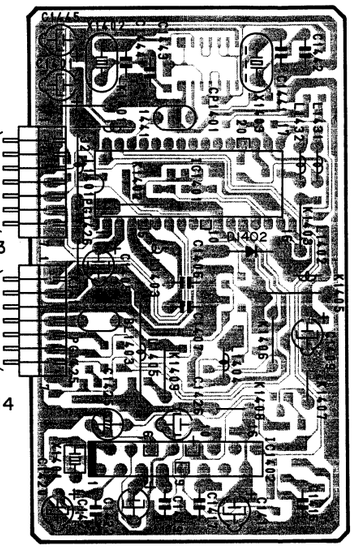
WYC(Y/CHROMA) P.C.B
－SIDE A－



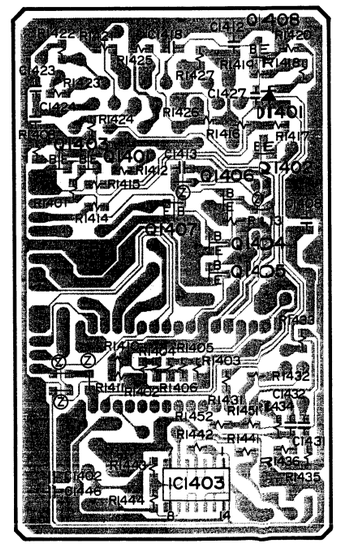
NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

WYC(Y/CHROMA) P.C.B
－SIDE B－

OSD CIRCUIT BOARD DIAGRAM

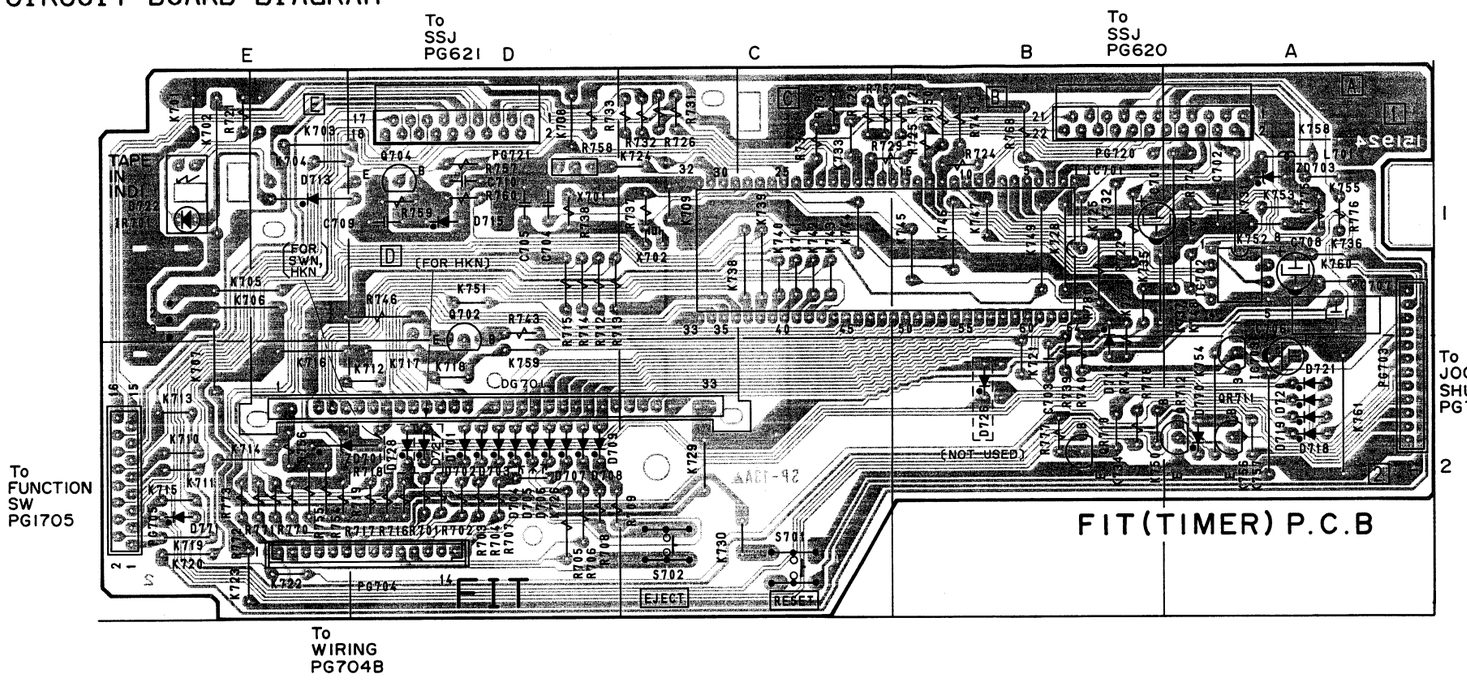


OSD P.C.B
－SIDE A－

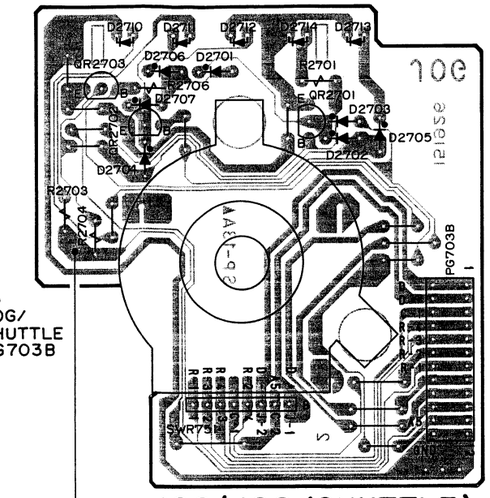


OSD P.C.B
－SIDE B－

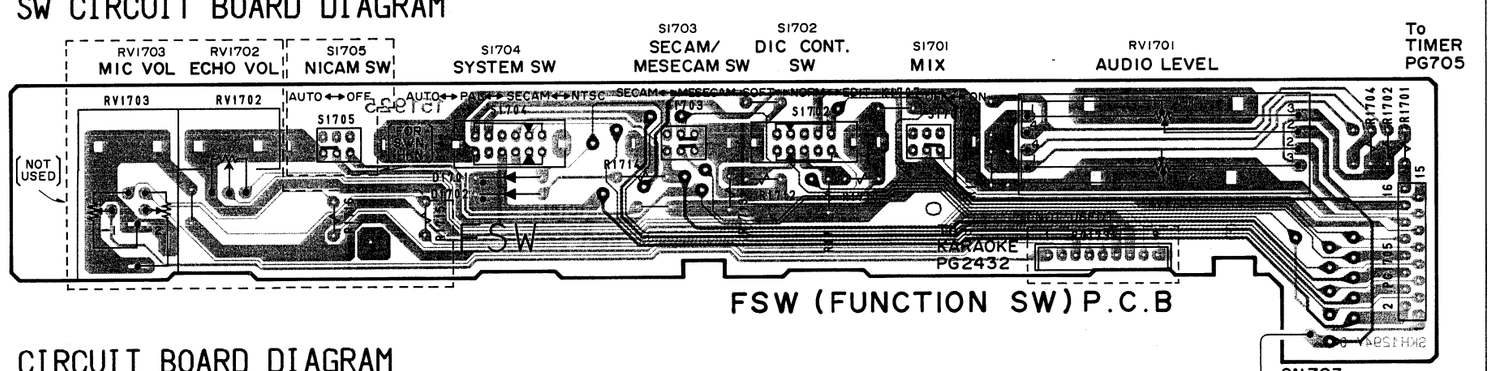
TIMER CIRCUIT BOARD DIAGRAM



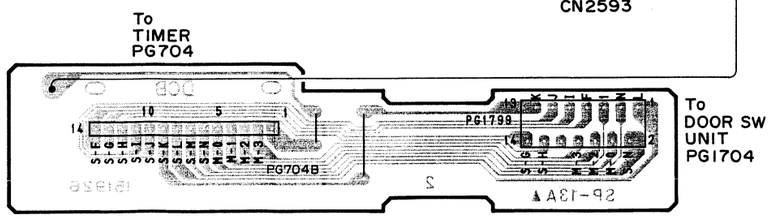
JOG/SHUTTLE CIRCUIT BOARD DIAGRAM



FUNCTION SW CIRCUIT BOARD DIAGRAM

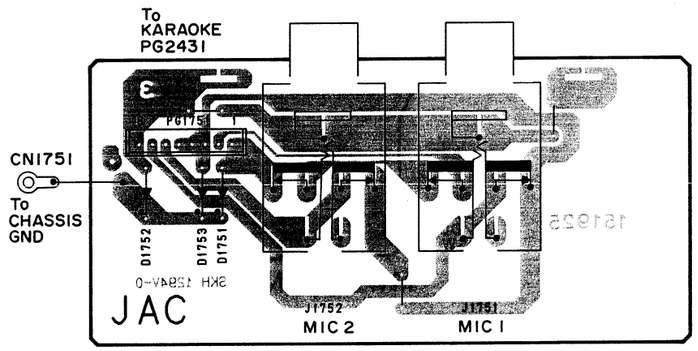


WIRING CIRCUIT BOARD DIAGRAM



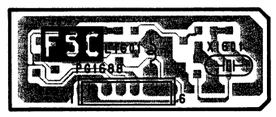
CN793 [1] To SSJ CN2593

MIC JACK CIRCUIT BOARD DIAGRAM

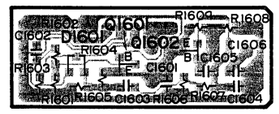


NOTE : NOT USED ON VT-F787EM

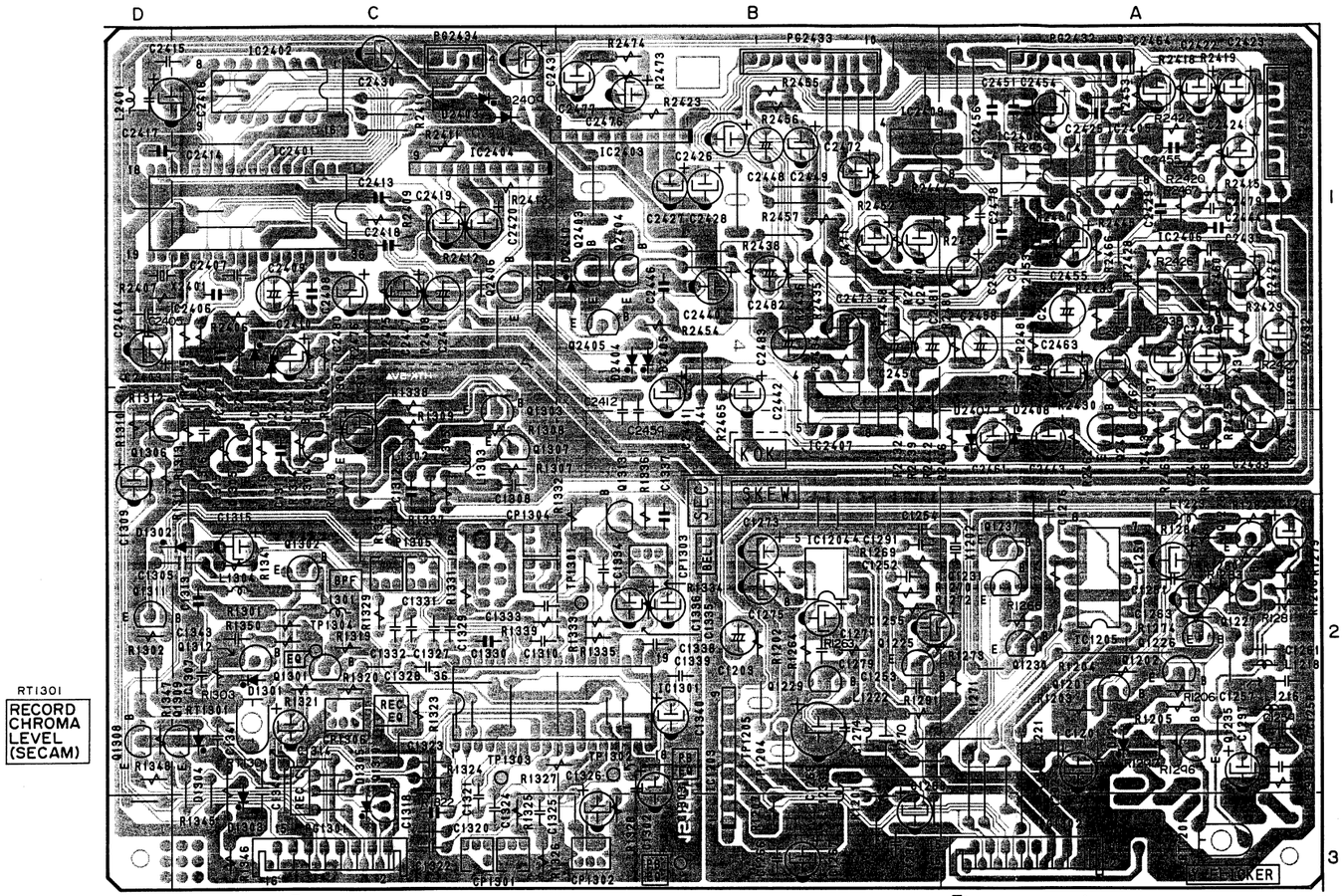
FSC (3.58MHz GEN) P.C.B CMPONENT SIDE



FSC (3.58MHz GEN) P.C.B SOLDER SIDE



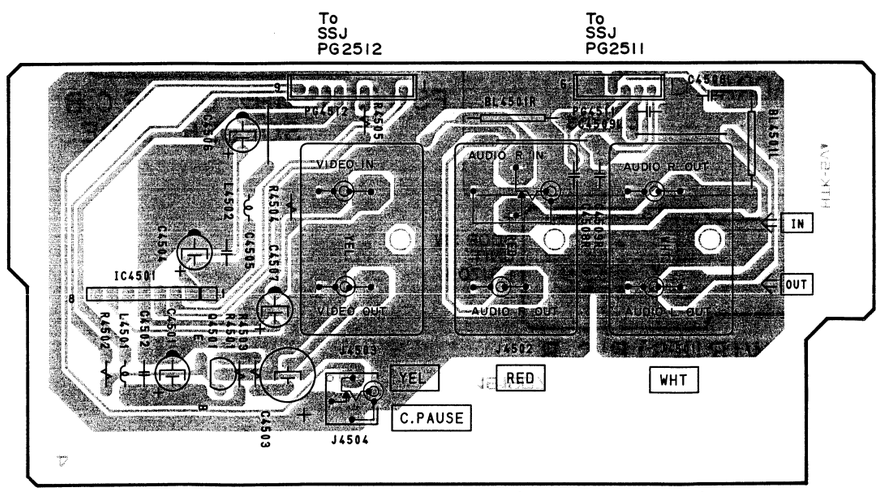
SECAM CHROMA CIRCUIT BOARD DIAGRAM



NOTE: PART NO. 2400'S ARE NOT USED ON VT-F787EM

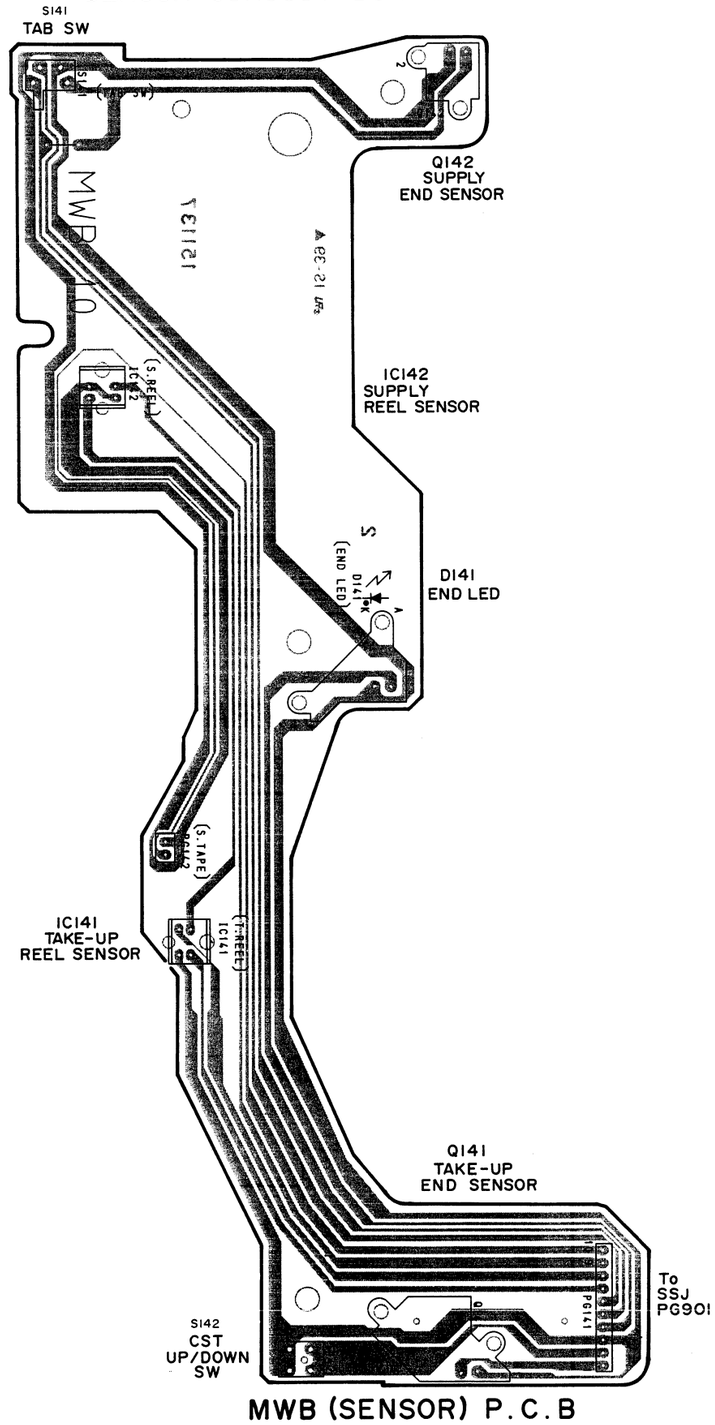
KSJ (SECAM CHROMA) P.C.B

REAR JACK CIRCUIT BOARD DIAGRAM



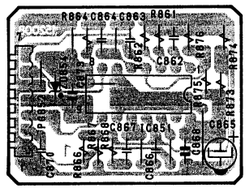
JAB (REAR JACK) P.C.B

SENSOR CIRCUIT BOARD DIAGRAM



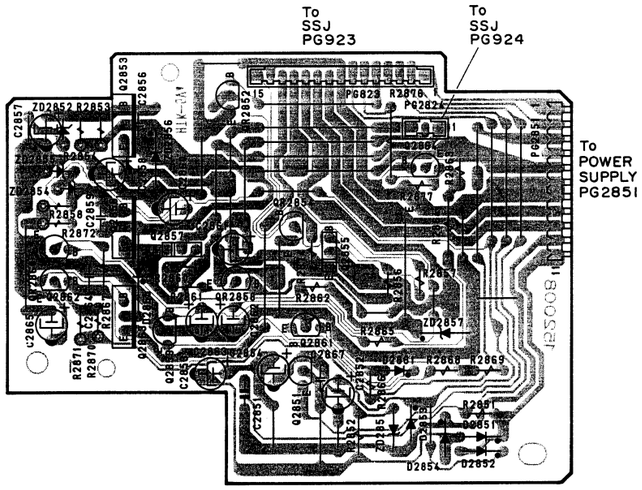
MWB (SENSOR) P.C.B

SWR CONTROL CIRCUIT BOARD DIAGRAM



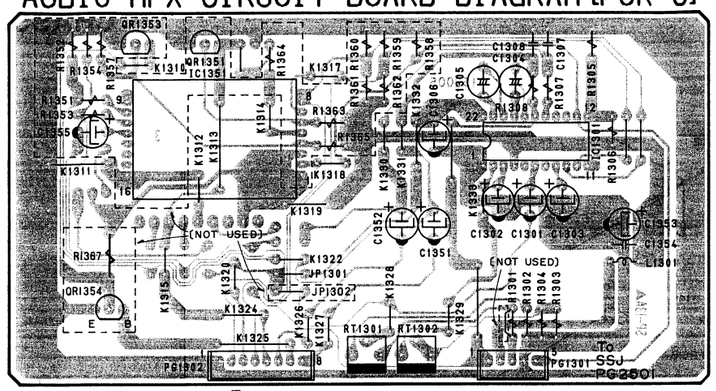
RIC (SWR CONTROL) P.C.B

REGULATOR CIRCUIT BOARD DIAGRAM



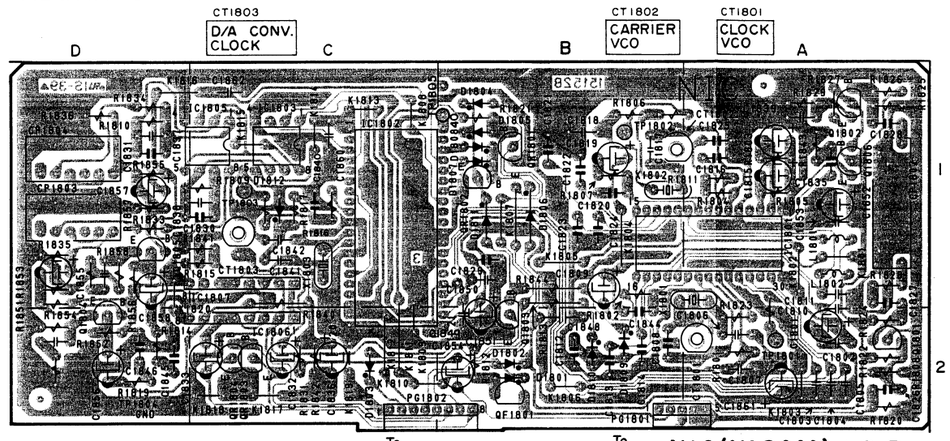
SUR (REGULATOR) P.C.B

AUDIO MPX CIRCUIT BOARD DIAGRAM [FOR J]



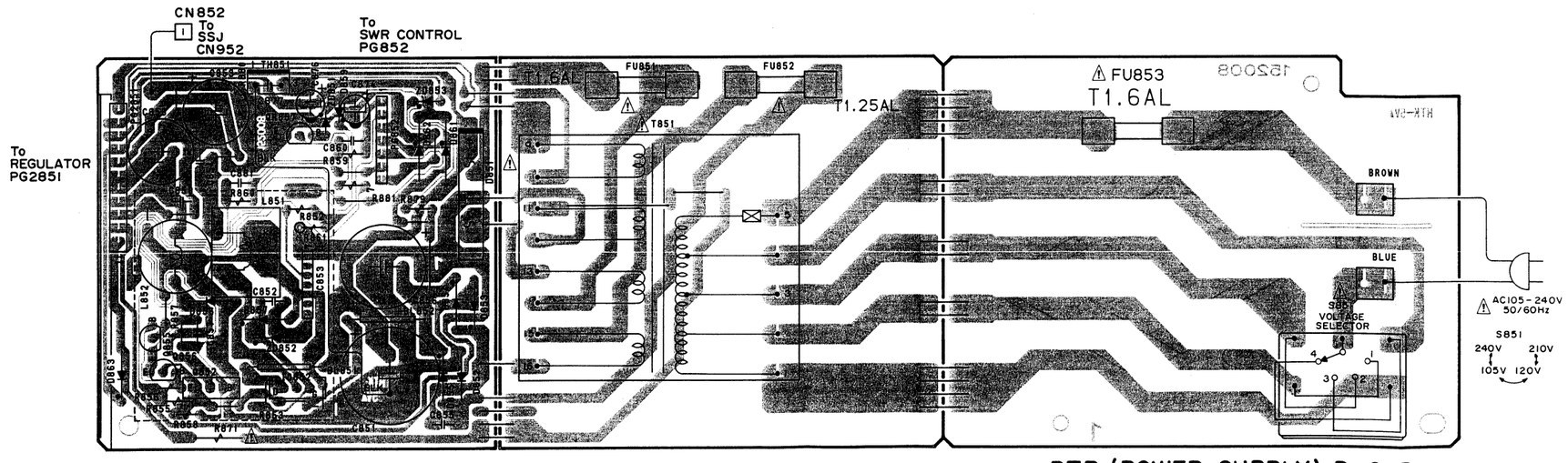
MJA (AUDIO MPX) P.C.B
(FOR J)

NICAM CIRCUIT BOARD DIAGRAM [FOR HKN, SWN]



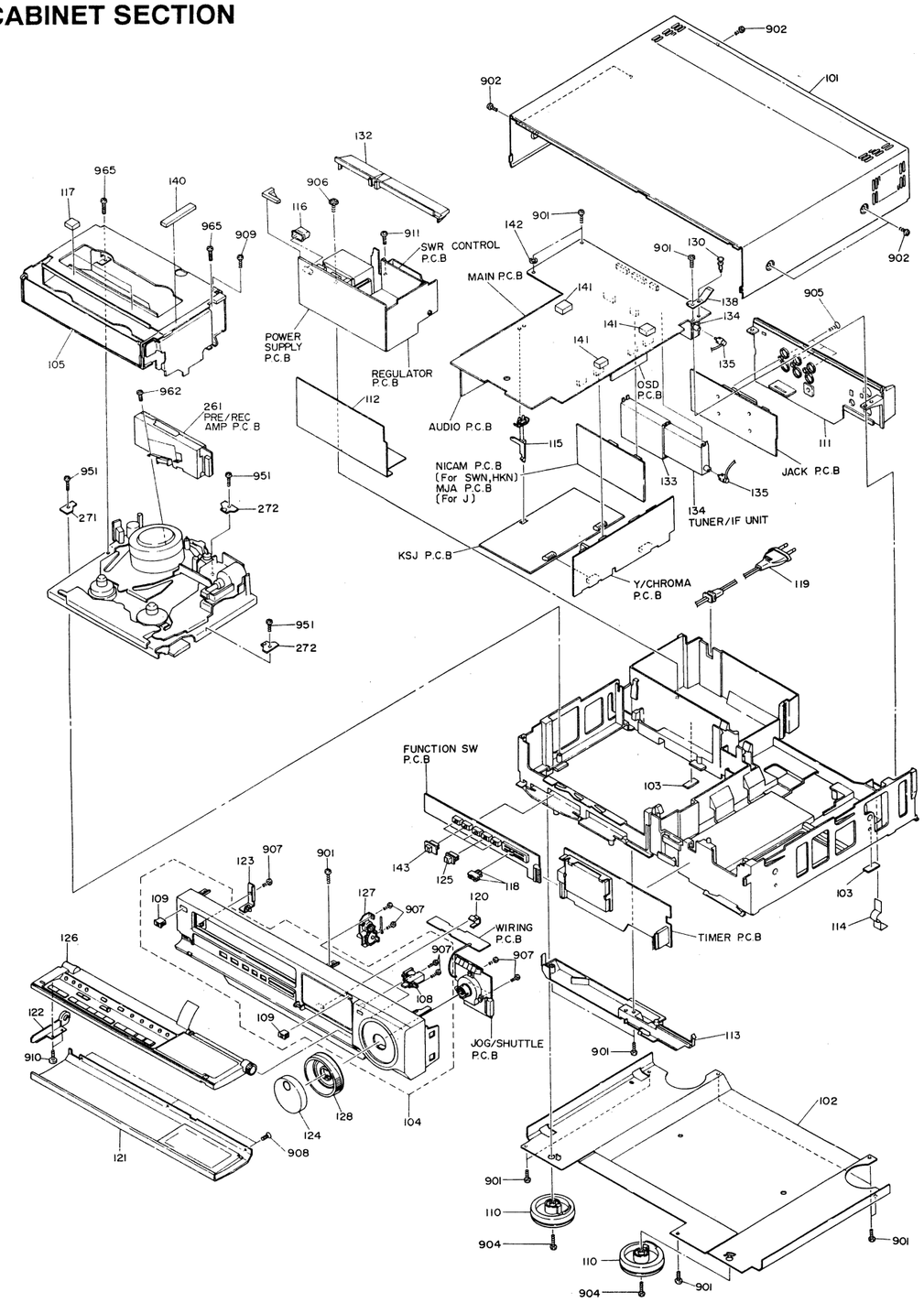
NIC (NICAM) P.C.B
(FOR SWN, HKN)

POWER SUPPLY CIRCUIT BOARD DIAGRAM



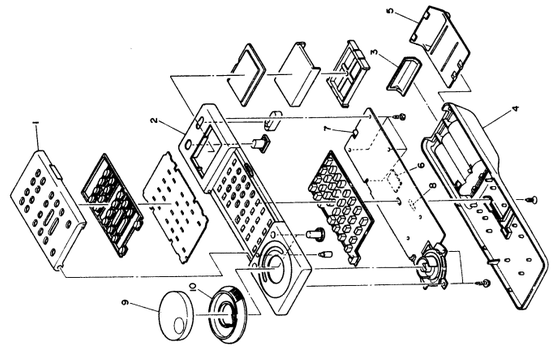
PTR (POWER SUPPLY) P.C.B

EXPLODED VIEWS
CABINET SECTION

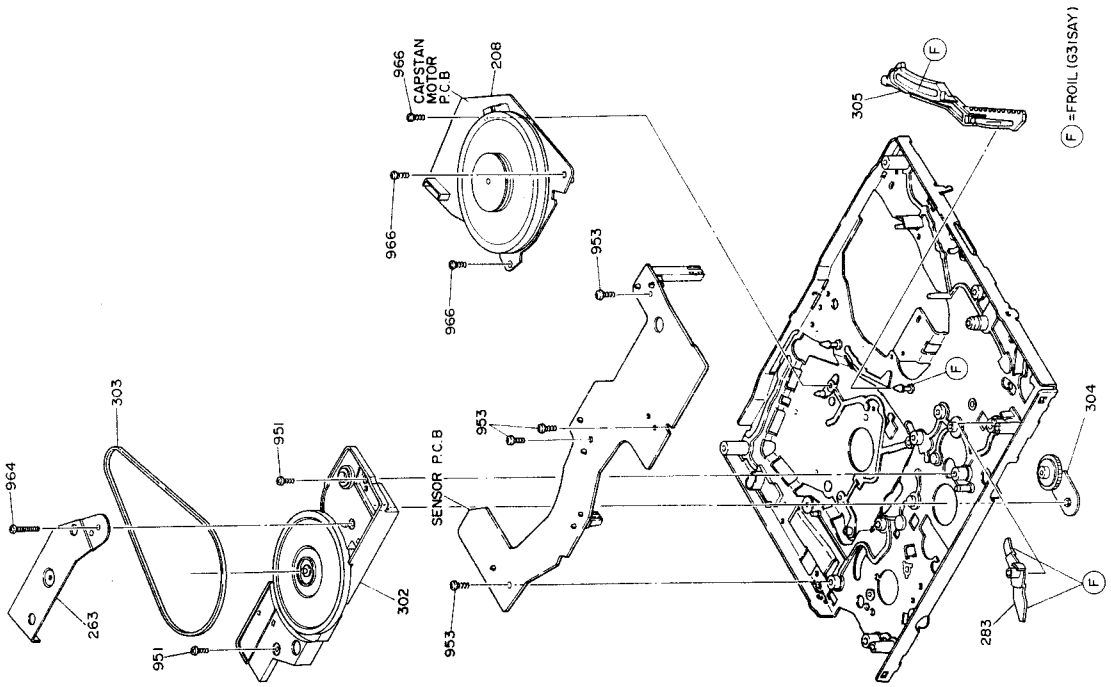


CHASSIS [I] SECTION

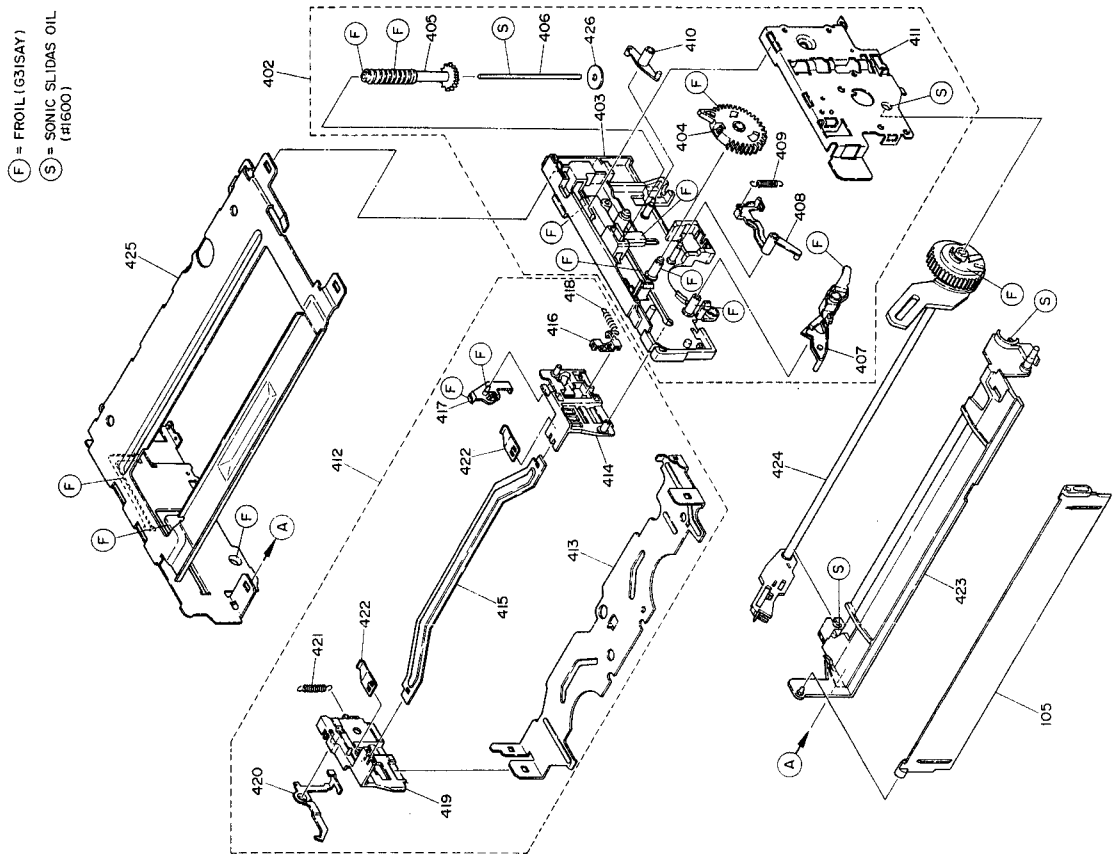
REMOTE CONTROL SECTION



CHASSIS [II] SECTION



CASSETTE LOADING MECHANISM SECTION



REPLACEMENT PARTS LIST
ELECTRICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C1201	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1202	0800015	ELECTROLYTIC 10UF 16V
C1203	0207457	ELECTROLYTIC 4.7UF 50V
C1250	0800041	ELECTROLYTIC 47UF 16V
C1251	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1252	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1253	0890021	CERAMIC DISC 82PF+-10% 50V
C1254	0890112	CERAMIC CHIP 8PF+-0.5% 50V
C1255	0800009	ELECTROLYTIC 4.7UF 25V
C1257	0890012	CERAMIC DISC 18PF+-5% 50V
C1258	0890019	CERAMIC DISC 68PF+-50% 50V
C1259	0890013	CERAMIC DISC 22PF+-5% 50V
C1260	0800041	ELECTROLYTIC 47UF 16V
C1261	0890017	CERAMIC DISC 47PF+-5% 50V
C1263	0800015	ELECTROLYTIC 10UF 16V
C1266	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1267	0800041	ELECTROLYTIC 47UF 16V
C1268	0800009	ELECTROLYTIC 4.7UF 25V
C1269	0800072	ELECTROLYTIC 470UF 6.3V
C1270	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C1271	0800003	ELECTROLYTIC 1UF 50V
C1273	0800003	ELECTROLYTIC 1UF 50V
C1274	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C1275	0800003	ELECTROLYTIC 1UF 50V
C1276	0890039	CERAMIC DISC 4700PF+-20% 16V
C1279	0890021	CERAMIC DISC 82PF+-10% 50V
C1280	0890017	CERAMIC DISC 47PF+-5% 50V
C1291	0890019	CERAMIC DISC 68PF+-50% 50V
C1297	0800041	ELECTROLYTIC 47UF 16V
C1301	0800015	ELECTROLYTIC 10UF 16V(J)[MJA]
C1301	0800039	ELECTROLYTIC 47UF 10V
C1302	0800015	ELECTROLYTIC 10UF 16V(J)[MJA]
C1302	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1303	0800015	ELECTROLYTIC 10UF 16V(J)[MJA]
C1303	0800039	ELECTROLYTIC 47UF 10V
C1304	0207458	ELECTROLYTIC 10UF 25V(J)[MJA]
C1304	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1305	0207458	ELECTROLYTIC 10UF 25V(J)[MJA]
C1305	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1306	0800015	ELECTROLYTIC 10UF 16V(J)[MJA]
C1307	0208379	CERAMIC DISC 0.01UF+-30% 16V(J)[MJA]
C1307	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1308	0208379	CERAMIC DISC 0.01UF+-30% 16V(J)[MJA]
C1308	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1309	0800039	ELECTROLYTIC 47UF 10V
C1310	0890026	CERAMIC DISC 220PF+-10% 50V
C1311	0880057	POLYESTER FILM 0.1UF+-10% 50V
C1312	02080503	CERAMIC CHIP 68PF+-5% 50V
C1313	0208042	CERAMIC DISC 33PF+-5% 50V
C1314	0800015	ELECTROLYTIC 10UF 16V
C1315	0800015	ELECTROLYTIC 10UF 16V
C1316	0890026	CERAMIC DISC 220PF+-10% 50V
C1318	0880035	POLYESTER FILM 0.0022UF+-10% 50V
C1320	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1321	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1322	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1323	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1324	0890026	CERAMIC DISC 220PF+-10% 50V
C1325	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1326	0800015	ELECTROLYTIC 10UF 16V
C1327	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1328	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1329	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1330	0890118	CERAMIC DISC 22PF+-5% 50V
C1331	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1332	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1333	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1334	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1335	0800039	ELECTROLYTIC 47UF 10V
C1336	0800039	ELECTROLYTIC 47UF 10V
C1337	0890118	CERAMIC DISC 22PF+-5% 50V
C1338	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1339	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1340	0800015	ELECTROLYTIC 10UF 16V
C1341	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1343	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1344	0890043	CERAMIC DISC 0.01UF+-20% 16V
C1351	0800009	ELECTROLYTIC 4.7UF 25V(J)[MJA]
C1352	0800009	ELECTROLYTIC 4.7UF 25V(J)[MJA]
C1353	0800041	ELECTROLYTIC 47UF 16V(J)[MJA]
C1354	0208379	CERAMIC DISC 0.01UF+-30% 16V(J)[MJA]
C1401	0800039	ELECTROLYTIC 47UF 10V
C1402	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1405	0800003	ELECTROLYTIC 1UF 50V
C1406	0208404	CERAMIC CHIP 33PF+-5% 50V
C1407	0208403	CERAMIC CHIP 12PF+-5% 50V
C1408	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1409	0800039	ELECTROLYTIC 47UF 10V
C1411	0800039	ELECTROLYTIC 47UF 10V
C1412	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1413	0209897	CERAMIC CHIP 56PF+-5% 50V
C1416	0880051	MYLAR 0.033UF+-10% 50V
C1417	0880031	MYLAR 1000PF+-10% 50V
C1418	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1419	0208464	CERAMIC DISC 100PF+-5% 50V
C1420	0800003	ELECTROLYTIC 1UF 50V
C1421	0880055	MYLAR 0.068UF+-10% 50V
C1422	0800003	ELECTROLYTIC 1UF 50V
C1423	0893035	CERAMIC CHIP 2200PF+-10% 50V
C1424	0209906	CERAMIC DISC 820PF+-5% 50V
C1425	0207457	ELECTROLYTIC 4.7UF 50V
C1426	0800009	ELECTROLYTIC 4.7UF 25V
C1427	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1431	0209895	CERAMIC CHIP 39PF+-5% 50V
C1432	0209895	CERAMIC CHIP 39PF+-5% 50V
C1441	0890117	CERAMIC DISC 18PF+-5% 50V
C1442	0890117	CERAMIC DISC 18PF+-5% 50V
C1443	0890117	CERAMIC DISC 18PF+-5% 50V
C1444	0890116	CERAMIC DISC 15PF+-5% 50V
C1445	0800039	ELECTROLYTIC 47UF 10V
C1446	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1531	0800015	ELECTROLYTIC 10UF 16V
C1532	0890044	CERAMIC DISC 0.022UF+80-20% 25
C1533	0207454	ELECTROLYTIC 47UF 10V
C1534	0207456	ELECTROLYTIC 1UF 50V(J)[SSJ]
C1534	0255116	ELECTROLYTIC 1UF 50V(HKN, SWN)
C1535L	0880015	POLYESTER FILM 0.068UF+-10% 50
C1535R	0880015	POLYESTER FILM 0.068UF+-10% 50
C1536L	0880015	POLYESTER FILM 0.068UF+-10% 50
C1536R	0880015	POLYESTER FILM 0.068UF+-10% 50
C1537L	0800109	ELECTROLYTIC 1.0UF 50V
C1537R	0800109	ELECTROLYTIC 1.0UF 50V
C1538	0890044	CERAMIC DISC 0.022UF+80-20% 25
C1539L	0890028	CERAMIC DISC 330PF+-10% 50V
C1539R	0890028	CERAMIC DISC 330PF+-10% 50V
C1540	0890039	CERAMIC DISC 4700PF+-20% 16V
C1541	0800011	ELECTROLYTIC 4.7UF 35V

SYMBOL-NO	P-NO	DESCRIPTION
C1601	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1602	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1603	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1604	0209853	CERAMIC DISC 68PF+-5% 50V
C1605	0893031	CERAMIC CHIP 1000PF+-10% 50V
C1606	0209846	CERAMIC CHIP 33PF+-10% 50V
C1801	0800029	ELECTROLYTIC 33UF 6V(HKN, SWN)
C1802	0890043	CERAMIC DISC 0.01UF+-20% 16V(HKN, SWN)
C1803	0890011	CERAMIC DISC 15PF+-5% 50V(HKN, SWN)
C1804	0890011	CERAMIC DISC 15PF+-5% 50V(HKN, SWN)
C1805	0890011	CERAMIC DISC 15PF+-5% 50V(HKN, SWN)
C1806	0890117	CERAMIC DISC 18PF+-5% 50V(HKN, SWN)
C1807	0208458	CERAMIC DISC 56PF+-5% 50V(HKN, SWN)
C1808	0890117	CERAMIC DISC 18PF+-5% 50V(HKN, SWN)
C1809	0207524	ELECTROLYTIC 0.47UF 50V(HKN, SWN)
C1810	0890022	CERAMIC DISC 100PF+-10% 50V(HKN, SWN)
C1811	0890022	CERAMIC DISC 100PF+-10% 50V(HKN, SWN)
C1812	0880016	POLYESTER FILM 0.1UF+-10% 50V(HKN, SWN)
C1813	0880016	POLYESTER FILM 0.1UF+-10% 50V(HKN, SWN)
C1814	0880016	POLYESTER FILM 0.1UF+-10% 50V(HKN, SWN)
C1815	0800001	ELECTROLYTIC 0.47UF 50V(HKN, SWN)
C1816	02464543	CERAMIC DISC 39PF+-5% 50V(HKN, SWN)
C1817	0890117	CERAMIC DISC 18PF+-5% 50V(HKN, SWN)
C1818	02464423	CAPACITOR CERAMIC 12PF 5% DC50WV(HKN, SWN)
C1819	0800001	ELECTROLYTIC 0.47UF 50V(HKN, SWN)
C1820	0880009	POLYESTER FILM 0.01UF+-10% 50V(HKN, SWN)
C1821	0880016	POLYESTER FILM 0.1UF+-10% 50V(HKN, SWN)
C1822	0268255	MYLAR 0.1UF+-10% 50V(HKN, SWN)
C1823	0268247	MYLAR 0.01UF+-10% 50V(HKN, SWN)
C1824	0880009	POLYESTER FILM 0.01UF+-10% 50V(HKN, SWN)
C1825	0890123	CERAMIC DISC 47PF+-5% 50V(HKN, SWN)
C1826	0880009	POLYESTER FILM 0.01UF+-10% 50V(HKN, SWN)
C1827	0880009	POLYESTER FILM 0.01UF+-10% 50V(HKN, SWN)
C1828	0880003	POLYESTER FILM 1000PF+-10% 50V(HKN, SWN)
C1829	0880012	POLYESTER FILM 0.022UF+-10% 50V(HKN, SWN)
C1830	0880003	POLYESTER FILM 1000PF+-10% 50V(HKN, SWN)
C1831	0880003	POLYESTER FILM 1000PF+-10% 50V(HKN, SWN)
C1832	0207461	ELECTROLYTIC 22UF 16V(HKN, SWN)
C1833	0207461	ELECTROLYTIC 22UF 16V(HKN, SWN)
C1835	0890035	CERAMIC DISC 1000PF 50V(HKN, SWN)
C1836	0800041	ELECTROLYTIC 47UF 16V(HKN, SWN)
C1837	0890031	CERAMIC DISC 470PF+-10% 50V(HKN, SWN)
C1838	0890031	CERAMIC DISC 470PF+-10% 50V(HKN, SWN)
C1839	0207524	ELECTROLYTIC 0.47UF 50V(HKN, SWN)
C1840	0880016	POLYESTER FILM 0.1UF+-10% 50V(HKN, SWN)
C1841	0208464	CERAMIC DISC 100PF+-5% 50V(HKN, SWN)
C1842	0890118	CERAMIC DISC 22PF+-5% 50V(HKN, SWN)
C1844	0268247	MYLAR 0.01UF+-10% 50V(HKN, SWN)
C1845	0880017	POLYESTER FILM 0.15UF+-10% 50V(HKN, SWN)
C1846	0880017	POLYESTER FILM 0.15UF+-10% 50V(HKN, SWN)
C1848	0890043	CERAMIC DISC 0.01UF+-20% 16V(HKN, SWN)
C1849	0890022	CERAMIC DISC 100PF+-10% 50V(HKN, SWN)
C1850	0890022	CERAMIC DISC 100PF+-10% 50V(HKN, SWN)
C1851	0800049	ELECTROLYTIC 100UF 16V(HKN, SWN)
C1852	0800032	ELECTROLYTIC 33UF 16V(HKN, SWN)
C1853	0890043	CERAMIC DISC 0.01UF+-20% 16V(HKN, SWN)
C1854	0800009	ELECTROLYTIC 4.7UF 25V(HKN, SWN)
C1855	0207458	ELECTROLYTIC 10UF 25V(HKN, SWN)
C1856	0207458	ELECTROLYTIC 10UF 25V(HKN, SWN)
C1857	0207458	ELECTROLYTIC 10UF 25V(HKN, SWN)
C1858	0207458	ELECTROLYTIC 10UF 25V(HKN, SWN)
C1860	0890044	CERAMIC DISC 0.022UF+80-20% 25V(HKN, SWN)
C1861	0256606	ELECTROLYTIC 1UF 50V(HKN, SWN)
C1862	0890044	CERAMIC DISC 0.022UF+80-20% 25V(HKN, SWN)
C1901	0800038	ELECTROLYTIC 47UF 6.3V
C1902	0208379	CERAMIC DISC 0.01UF+-30% 16V
C1903	0208379	CERAMIC DISC 0.01UF+-30% 16V
C1904	0208379	CERAMIC DISC 0.01UF+-30% 16V
C1906	0890035	CERAMIC DISC 1000PF 50V
C201	0209853	CERAMIC DISC 68PF+-5% 50V
C202	0209891	CERAMIC CHIP 12PF+-5% 50V(HKN, SWN)
C205	0209897	CERAMIC CHIP 56PF+-5% 50V
C206	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C208	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C209	0209853	CERAMIC DISC 68PF+-5% 50V
C210	0209878	CERAMIC CHIP 8PF+-0.5% 50V
C211	0209891	CERAMIC CHIP 12PF+-5% 50V
C212	0209852	CERAMIC CHIP 180PF+-5% 50V
C213	0209897	CERAMIC CHIP 56PF+-5% 50V
C215	0209903	CERAMIC CHIP 470PF+-5% 50V
C216	0209847	CERAMIC CHIP 82PF+-10% 50V
C217	0209895	CERAMIC CHIP 39PF+-5% 50V
C218	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C219	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C220	0209897	CERAMIC CHIP 56PF+-5% 50V
C221	0209899	CERAMIC DISC 120PF+-5% 50V
C222	0209852	CERAMIC CHIP 180PF+-5% 50V
C223	0209893	CERAMIC CHIP 22PF+-10% 50V
C224	0209876	CERAMIC CHIP 6PF+-10% 50V
C225	0209893	CERAMIC CHIP 22PF+-10% 50V
C226	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C227	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C228	0209894	CERAMIC CHIP 27PF+-10% 50V
C231	0800117	ELECTROLYTIC 4.7UF 25V
C232	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C233	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C234	0800109	ELECTROLYTIC 1.0UF 50V
C235	0209894	CERAMIC CHIP 27PF+-10% 50V
C236	0209846	CERAMIC CHIP 33PF+-10% 50V
C237	0209894	CERAMIC CHIP 27PF+-10% 50V
C238	0209896	CERAMIC CHIP 47PF+-5% 50V
C239	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C240	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C241	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C242	0209942	CERAMIC CHIP 100PF+-5% 50V
C243	0209940	CERAMIC CHIP 68PF+-5% 50V
C244	0209935	CERAMIC CHIP 27PF+-5% 50V
C245	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C246	0800039	ELECTROLYTIC 47UF 10V
C247	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C248	0800039	ELECTROLYTIC 47UF 10V
C249	0209940	CERAMIC CHIP 68PF+-5% 50V
C250	0209922	CERAMIC DISC 2PF+-5% 50V
C2501	0890008	CERAMIC DISC 10PF+-5% 50V
C2502	0800039	ELECTROLYTIC 47UF 10V
C2503	0800003	ELECTROLYTIC 1UF 50V
C2504	0800039	ELECTROLYTIC 47UF 10V
C2505	0890043	CERAMIC DISC 0.01UF+-20% 16V
C2506	0800041	ELECTROLYTIC 47UF 16V
C2507	0890043	CERAMIC DISC 0.01UF+-20% 16V
C251	0209934	CERAMIC CHIP 22PF+-5% 50V
C252	0800109	ELECTROLYTIC 1.0UF 50V
C253	0800109	ELECTROLYTIC 1.0UF 50V
C254	0207456	ELECTROLYTIC 1UF 50V
C255	0800122	ELECTROLYTIC 10UF 16V
C256	0800122	ELECTROLYTIC 10UF 16V
C2560	0800009	ELECTROLYTIC 4.7UF 25V
C257	0800109	ELECTROLYTIC 1.0UF 50V
C258	0209936	CERAMIC CHIP 33PF+-5% 50V
C260	0209893	CERAMIC CHIP 22PF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION
C261	0800109	ELECTROLYTIC 1.0UF 50V
C262	0209851	CERAMIC DISC 15PF+-5% 50V
C263	0893055	CERAMIC CHIP 0.1UF+80-20% 16V
C264	0800047	ELECTROLYTIC 100UF 6.3V
C265	0800122	ELECTROLYTIC 10UF 16V
C266	0893055	CERAMIC CHIP 0.1UF+80-20% 16V
C267	0800047	ELECTROLYTIC 100UF 6.3V
C268	0800122	ELECTROLYTIC 10UF 16V
C271	0209904	CERAMIC DISC 560PF+-5% 50V
C272	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C273	0800139	ELECTROLYITC 47UF 10V
C274	0209891	CERAMIC CHIP 12PF+-5% 50V
C275	0209893	CERAMIC CHIP 22PF+-10% 50V
C277	0209894	CERAMIC CHIP 27PF+-10% 50V
C278	0209894	CERAMIC CHIP 27PF+-10% 50V
C281	0209923	CERAMIC CHIP 3PF+-0.25% 50V
C282	0893023	CERAMIC CHIP 0.047UF+-10% 25V
C2851	0880014	POLYESTER FILM 0.047UF+-10% 50V
C2852	0800044	ELECTROLYTIC 47UF 50V
C2853	0800026	ELECTROLYTIC 22UF 50V
C2854	0800109	ELECTROLYTIC 1.0UF 50V
C2856	0890043	CERAMIC DISC 0.01UF+-20% 16V
C2857	0800032	ELECTROLYTIC 33UF 16V
C2858	0800032	ELECTROLYTIC 33UF 16V
C2859	0890043	CERAMIC DISC 0.01UF+-20% 16V
C2860	0800032	ELECTROLYTIC 33UF 16V
C2861	0800032	ELECTROLYTIC 33UF 16V
C2862	0800109	ELECTROLYTIC 1.0UF 50V
C2863	0800109	ELECTROLYTIC 1.0UF 50V
C2864	0890022	CERAMIC DISC 100PF+-10% 50V
C2865	0800044	ELECTROLYTIC 47UF 50V
C2867	0890024	CERAMIC DISC 150PF+-10% 50V
C301	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C302	0209899	CERAMIC DISC 120PF+-5% 50V
C303	0209848	CERAMIC DISC 150PF+-5% 50V
C304	0209849	CERAMIC CHIP 390PF+-5% 50V
C305	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C306	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C307	0800139	ELECTROLYITC 47UF 10V
C308	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C309	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C310	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C311	0209848	CERAMIC DISC 150PF+-5% 50V
C312	0209896	CERAMIC CHIP 47PF+-5% 50V
C313	0209856	CERAMIC DISC 220PF+-5% 50V
C314	0880017	POLYESTER FILM 0.15UF+-10% 50V
C315	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C316	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C317	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C321	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C322	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C323	0209941	CERAMIC DISC 82PF+-5%
C324	0209940	CERAMIC CHIP 68PF+-5% 50V
C325	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C331	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C332	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C333	0800139	ELECTROLYITC 47UF 10V
C334	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C335	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C336	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C337	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C338	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C341	0209854	CERAMIC DISC 330PF+-5% 50V
C342	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C343	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C344	0209938	CERAMIC CHIP 47PF+-5% 50V
C345	0209938	CERAMIC CHIP 47PF+-5% 50V
C346	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C347	0209899	CERAMIC DISC 120PF+-5% 50V
C348	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C349	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C350	0893039	CERAMIC CHIP 4700PF+-10% 50V
C351	0880006	POLYESTER FILM 3300PF+-10% 50V
C352	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C353	0800122	ELECTROLYTIC 10UF 16V
C354	0209906	CERAMIC DISC 820PF+-5% 50V
C355	0800122	ELECTROLYTIC 10UF 16V
C356	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C357	0893079	CERAMIC DISC 0.01UF+80-20% 50V
C361	0209879	CERAMIC CHIP 9PF+-0.5% 50V
C362	0209880	CERAMIC CHIP 10PF+-0.5% 50V
C371	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C372	0800122	ELECTROLYTIC 10UF 16V
C373	0800134	ELECTROLYTIC 33UF 10V
C374	0893048	CERAMIC CHIP 0 022UF+-10% 50V
C375	0800039	ELECTROLYTIC 47UF 10V
C376	0893048	CERAMIC CHIP 0.022UF+-10% 50V
C377	0880015	POLYESTER FILM 0.068UF+-10% 50V
C378	0800114	ELECTROLYTIC 3.3UF 35V
C379	0209853	CERAMIC DISC 68PF+-5% 50V
C380	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C402	0800009	ELECTROLYTIC 4.7UF 25V
C403	0880013	POLYESTER FILM 0.033UF+-10% 50V
C405	0880007	POLYESTER FILM 4700PF+-10% 50V
C407	0800003	ELECTROLYTIC 1UF 50V
C408	0800009	ELECTROLYTIC 4.7UF 25V
C409	0800032	ELECTROLYTIC 33UF 16V
C410	0890033	CERAMIC DISC 680PF+-10% 50V
C411	0800015	ELECTROLYTIC 10UF 16V
C412	0890035	CERAMIC DISC 1000PF 50V
C413	0800001	ELECTROLYTIC 0.47UF 50V
C414	0209772	CERAMIC DISC 0.015UF+-5% 50V
C415	0890037	CERAMIC DISC 2200PF+-20% 16V
C416	0800105	ELECTROLYTIC 0.33UF 50V
C417	0800001	ELECTROLYTIC 0.47UF 50V
C418	0800039	ELECTROLYTIC 47UF 10V
C419	0890041	CERAMIC DISC 6800PF+-20% 16V
C420	0800031	ELECTROLYTIC 33UF 10V
C421	0890037	CERAMIC DISC 2200PF+-20% 16V
C422	0204272	POLYESTER FILM 3300PF+-5% 100V
C423	0890026	CERAMIC DISC 220PF+-10% 50V
C425	0800049	ELECTROLYTIC 100UF 16V
C426	0890043	CERAMIC DISC 0.01UF+-20% 16V
C427	0800009	ELECTROLYTIC 4.7UF 25V
C428	0890022	CERAMIC DISC 100PF+-10% 50V
C429	0890037	CERAMIC DISC 2200PF+-20% 16V
C430	0890018	CERAMIC DISC 56PF+-50% 50V
C431	0890018	CERAMIC DISC 56PF+-50% 50V
C432	0880007	POLYESTER FILM 4700PF+-10% 50V
C450	0890037	CERAMIC DISC 2200PF+-20% 16V
C4501	0800135	ELECTROLYTIC 33UF 16V
C4502	0890043	CERAMIC DISC 0.01UF+-20% 16V
C4503	0255138	ELECTROLYTIC 470UF 6.3V
C4504	0800135	ELECTROLYTIC 33UF 16V
C4505	0890043	CERAMIC DISC 0.01UF+-20% 16V
C4506	0800139	ELECTROLYITC 47UF 10V
C4507	0800139	ELECTROLYITC 47UF 10V
C4508L	0890035	CERAMIC DISC 1000PF 50V
C4508R	0890035	CERAMIC DISC 1000PF 50V
C4509L	0890035	CERAMIC DISC 1000PF 50V

SYMBOL-NO	P-NO	DESCRIPTION
C4509R	0890035	CERAMIC DISC 1000PF 50V
C502	0890022	CERAMIC DISC 100PF+-10% 50V
C503L	0890043	CERAMIC DISC 0.01UF+-20% 16V
C503R	0890043	CERAMIC DISC 0.01UF+-20% 16V
C504	0880048	MYLAR 0.022UF+-10% 50V
C505	0890028	CERAMIC DISC 330PF+-10% 50V
C506	0800003	ELECTROLYTIC 1UF 50V
C507	0800103	ELECTROLYTIC 0.22UF 50V
C508	0890043	CERAMIC DISC 0.01UF+-20% 16V
C509	0890022	CERAMIC DISC 100PF+-10% 50V
C510	0800047	ELECTROLYTIC 100UF 6.3V
C511	0890043	CERAMIC DISC 0.01UF+-20% 16V
C512	0800047	ELECTROLYTIC 100UF 6.3V
C513	0890043	CERAMIC DISC 0.01UF+-20% 16V
C514L	0800009	ELECTROLYTIC 4.7UF 25V
C514R	0800117	ELECTROLYTIC 4.7UF 25V
C515L	0890035	CERAMIC DISC 1000PF 50V
C515R	0890035	CERAMIC DISC 1000PF 50V
C516L	0890035	CERAMIC DISC 1000PF 50V
C516R	0890035	CERAMIC DISC 1000PF 50V
C517L	0890035	CERAMIC DISC 1000PF 50V
C517R	0890035	CERAMIC DISC 1000PF 50V
C518L	0890094	CERAMIC DISC 3300PF+-10% 25V
C518R	0890094	CERAMIC DISC 3300PF+-10% 25V
C519L	0890043	CERAMIC DISC 0.01UF+-20% 16V
C519R	0890043	CERAMIC DISC 0.01UF+-20% 16V
C520L	0800041	ELECTROLYTIC 47UF 16V
C520R	0800041	ELECTROLYTIC 47UF 16V
C521L	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C521R	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C522L	0800011	ELECTROLYTIC 4.7UF 35V
C522R	0800118	ELECTROLYTIC 4.7UF 35V
C523L	0800015	ELECTROLYTIC 10UF 16V
C523R	0800122	ELECTROLYTIC 10UF 16V
C524L	0880012	POLYESTER FILM 0.022UF+-10% 50V
C524R	0880012	POLYESTER FILM 0.022UF+-10% 50V
C525L	0880008	POLYESTER FILM 6800PF+-10% 50V
C525R	0880008	POLYESTER FILM 6800PF+-10% 50V
C526L	0880004	POLYESTER FILM 1500PF+-10% 50V
C526R	0880004	POLYESTER FILM 1500PF+-10% 50V
C527L	0207457	ELECTROLYTIC 4.7UF 50V
C527R	0207457	ELECTROLYTIC 4.7UF 50V
C528L	0207457	ELECTROLYTIC 4.7UF 50V
C528R	0207457	ELECTROLYTIC 4.7UF 50V
C530	0800003	ELECTROLYTIC 1UF 50V
C531	0800003	ELECTROLYTIC 1UF 50V
C533L	0207404	ELECTROLYTIC 4.7UF 35V
C533R	0207404	ELECTROLYTIC 4.7UF 35V
C534	0800015	ELECTROLYTIC 10UF 16V
C535	0800105	ELECTROLYTIC 0.33UF 50V
C536	0800056	ELECTROLYTIC 220UF 6.3V
C537L	0890036	CERAMIC DISC 1500PF+-20% 16V
C537R	0890036	CERAMIC DISC 1500PF+-20% 16V
C538L	0800009	ELECTROLYTIC 4.7UF 25V
C538R	0800009	ELECTROLYTIC 4.7UF 25V
C543	0890046	CERAMIC DISC 0.1UF+80-20% 50V
C544	0800039	ELECTROLYTIC 47UF 10V
C545L	0800009	ELECTROLYTIC 4.7UF 25V
C545R	0800009	ELECTROLYTIC 4.7UF 25V
C546	0890022	CERAMIC DISC 100PF+-10% 50V
C549	0890022	CERAMIC DISC 100PF+-10% 50V
C550	0890022	CERAMIC DISC 100PF+-10% 50V
C551	0890043	CERAMIC DISC 0.01UF+-20% 16V
C552L	0800009	ELECTROLYTIC 4.7UF 25V
C552R	0800009	ELECTROLYTIC 4.7UF 25V

SYMBOL-NO	P-NO	DESCRIPTION
C553	0800049	ELECTROLYTIC 100UF 16V
C554	0800047	ELECTROLYTIC 100UF 6.3V
C556	0890039	CERAMIC DISC 4700PF+-20% 16V
C557	0890039	CERAMIC DISC 4700PF+-20% 16V
C558	0890075	CERAMIC DISC 120PF+-5% 50V
C559	0890075	CERAMIC DISC 120PF+-5% 50V
C560	0890073	CERAMIC DISC 82PF+-5% 50V
C561	0890073	CERAMIC DISC 82PF+-5% 50V
C562	0890059	CERAMIC CHIP 9PF+-0.5% 50V
C563	0890059	CERAMIC CHIP 9PF+-0.5% 50V
C564L	0890039	CERAMIC DISC 4700PF+-20% 16V
C564R	0890039	CERAMIC DISC 4700PF+-20% 16V
C565	0246450	CERAMIC DISC. 27PF+-5%
C602	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C603	0890038	CERAMIC DISC 3300PF+-20% 16V
C604	0800015	ELECTROLYTIC 10UF 16V
C605	0890035	CERAMIC DISC 1000PF 50V
C606	0800032	ELECTROLYTIC 33UF 16V
C607	0890026	CERAMIC DISC 220PF+-10% 50V
C608	0890014	CERAMIC DISC 27PF+-50% 50V
C609	0800009	ELECTROLYTIC 4.7UF 25V
C610	0800039	ELECTROLYTIC 47UF 10V
C611	0208379	CERAMIC DISC 0.01UF+-30% 16V
C612	0208379	CERAMIC DISC 0.01UF+-30% 16V
C613	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C614	0880011	POLYESTER FILM 0.015UF+-10% 50V
C615	0800005	ELECTROLYTIC 2.2UF 50V
C616	0207456	ELECTROLYTIC 1UF 50V
C617	0880013	POLYESTER FILM 0.033UF+-10% 50V
C618	0207459	ELECTROLYTIC 0.47UF 50V
C619	0800015	ELECTROLYTIC 10UF 16V
C620	0800001	ELECTROLYTIC 0.47UF 50V
C621	0800015	ELECTROLYTIC 10UF 16V
C622	0880018	POLYESTER FILM 0.22UF+-10% 50V
C623	0880003	POLYESTER FILM 1000PF+-10% 50V
C625	0208379	CERAMIC DISC 0.01UF+-30% 16V
C632	0800005	ELECTROLYTIC 2.2UF 50V
C633	0800016	ELECTROLYTIC 10UF 25V
C634	0800016	ELECTROLYTIC 10UF 25V
C635	0800016	ELECTROLYTIC 10UF 25V
C636	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C637	0208379	CERAMIC DISC 0.01UF+-30% 16V
C638	0800015	ELECTROLYTIC 10UF 16V
C640	0890026	CERAMIC DISC 220PF+-10% 50V
C641	0890028	CERAMIC DISC 330PF+-10% 50V
C642	0890028	CERAMIC DISC 330PF+-10% 50V
C701	0800032	ELECTROLYTIC 33UF 16V
C702	0890043	CERAMIC DISC 0.01UF+-20% 16V
C703	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C704	0890118	CERAMIC DISC 22PF+-5% 50V
C705	02464483	CERAMIC DISC 22PF+-5% 50V
C706	0800038	ELECTROLYTIC 47UF 6.3V
C707	0217512	CAPACITOR 0.047UF+80-20% 5V
C708	0800032	ELECTROLYTIC 33UF 16V
C709	0268247	MYLAR 0.01UF+-10% 50V
C710	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C801	0800049	ELECTROLYTIC 100UF 16V
C802	0890043	CERAMIC DISC 0.01UF+-20% 16V
C803	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C804	0800044	ELECTROLYTIC 47UF 50V
C805	0800041	ELECTROLYTIC 47UF 16V
C806	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C807	0207458	ELECTROLYTIC 10UF 25V
C808	0256155	ELECTROLYTIC 10UF 16V
C809	0890045	CERAMIC DISC 0.047UF+80-20% 50V (HKN, SWN)

SYMBOL-NO	P-NO	DESCRIPTION
C810	0207404	ELECTROLYTIC 4.7UF 35V
C811	0800141	ELECTROLYTIC 47UF 16V
C813	0207454	ELECTROLYTIC 47UF 10V
C815	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C816	0800015	ELECTROLYTIC 10UF 16V
C817	0256155	ELECTROLYTIC 10UF 16V
C818	0800009	ELECTROLYTIC 4.7UF 25V
C819	0800103	ELECTROLYTIC 0.22UF 50V
C820	0800005	ELECTROLYTIC 2.2UF 50V
C821	0209771	CERAMIC DISC 0.01UF+-20% 50V(HKN, SWN)
C822	0800009	ELECTROLYTIC 4.7UF 25V(HKN, SWN)
C851	0256656	ELECTROLYTIC 2200UF 50V
C852	0204315	POLYESTER FILM 6.8UF+-5% 50V
C853	0254171	ELECTROLYTIC 820UF 25V
C854	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C855	0890102	CERAMIC DISC 0.022UF+80-20% 50V
C856	0256862	ELECTROLYTIC 2200UF 25V
C857	0204312	POLYESTER FILM 0.022UF+-5% 50V
C858	0254171	ELECTROLYTIC 820UF 25V
C859	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C860	0880009	POLYESTER FILM 0.01UF+-10% 50V
C861	0204311	POLYESTER FILM 4700PF+-50% 50V
C862	0890035	CERAMIC DISC 1000PF 50V
C863	0890031	CERAMIC DISC 470PF+-10% 50V
C864	0890024	CERAMIC DISC 150PF+-10% 50V
C865	0800122	ELECTROLYTIC 10UF 16V
C866	0890031	CERAMIC DISC 470PF+-10% 50V
C867	0890024	CERAMIC DISC 150PF+-10% 50V
C868	0209645	CERAMIC DISC 47000PF+-10% 16V
C870	0890035	CERAMIC DISC 1000PF 50V
C873	0209645	CERAMIC DISC 47000PF+-10% 16V
C874	0800015	ELECTROLYTIC 10UF 16V
C876	0800003	ELECTROLYTIC 1UF 50V
C905	0800072	ELECTROLYTIC 470UF 6.3V
C906	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C907	0800032	ELECTROLYTIC 33UF 16V
C908	0208379	CERAMIC DISC 0.01UF+-30% 16V
C911	0208379	CERAMIC DISC 0.01UF+-30% 16V
C912	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C913	0208379	CERAMIC DISC 0.01UF+-30% 16V
C914	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C915	0800034	ELECTROLYTIC 33UF 35V
C916	0890038	CERAMIC DISC 3300PF+-20% 16V
C917	0208379	CERAMIC DISC 0.01UF+-30% 16V
C918	0800032	ELECTROLYTIC 33UF 16V
C919	0204273	POLYESTER FILM 6800PF+-5% 100V
C921	0890035	CERAMIC DISC 1000PF 50V
C922	0890035	CERAMIC DISC 1000PF 50V
C923	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C924	0890044	CERAMIC DISC 0.022UF+80-20% 25V
C925	0208379	CERAMIC DISC 0.01UF+-30% 16V
C926	0890045	CERAMIC DISC 0.047UF+80-20% 50V
C927	0890045	CERAMIC DISC 0.047UF+80-20% 50V
		RESISTORS
R1201	0700031	CARBON FILM 1800HM+-5% 1/8W
R1202	0700031	CARBON FILM 1800HM+-5% 1/8W
R1203	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1204	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1205	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R1206	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R1207	0700032	CARBON FILM 220 OHM+-5% 1/8W
R1208	0700032	CARBON FILM 220 OHM+-5% 1/8W
R1263	0700034	CARBON FILM 3300HM+-5% 1/8W
R1264	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R1266	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1269	0700036	CARBON FILM 4700HM+-5% 1/8W
R1270	0700038	CARBON FILM 6800HM+-5% 1/8W
R1271	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1272	0700024	CARBON FILM 560HM+-5% 1/8W
R1273	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1274	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1275	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1279	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1280	0700059	CARBON FILM 27KOHM+-5% 1/8W
R1281	0700031	CARBON FILM 1800HM+-5% 1/8W
R1282	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R1283	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1284	0700021	CARBON FILM 33 OHM+-5% 1/8W
R1291	0700032	CARBON FILM 220 OHM+-5% 1/8W
R1296	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1297	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1299	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R1301	0700039	CARBON FILM 8200HM+-5% 1/8W
R1301	0700054	CARBON FILM 10KOHM+-5% 1/8W(J)[MJA]
R1302	0700045	CARBON FILM 2.2KOHM+-5% 1/8W(J)[MJA]
R1302	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1303	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1303	0700072	CARBON FILM 220KOHM+-5% 1/8W(J)[MJA]
R1304	0700059	CARBON FILM 27KOHM+-5% 1/8W(J)[MJA]
R1305	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R1305	0700048	CARBON FILM 3.9KOHM+-5% 1/8W(J)[MJA]
R1306	0700053	CARBON FILM 8.2KOHM+-5% 1/8W(J)[MJA]
R1307	0700045	CARBON FILM 2.2KOHM+-5% 1/8W(J)[MJA]
R1307	0700056	CARBON FILM 15KOHM+-5% 1/8W
R1308	0700045	CARBON FILM 2.2KOHM+-5% 1/8W(J)[MJA]
R1308	0700059	CARBON FILM 27KOHM+-5% 1/8W
R1309	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1310	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1311	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1312	0700034	CARBON FILM 3300HM+-5% 1/8W
R1313	0700039	CARBON FILM 8200HM+-5% 1/8W
R1314	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R1315	0700036	CARBON FILM 4700HM+-5% 1/8W
R1316	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R1318	0700073	CARBON FILM 270KOHM+-5% 1/8W
R1319	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1320	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R1321	0700038	CARBON FILM 6800HM+-5% 1/8W
R1322	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1323	0700057	CARBON FILM 18KOHM+-5% 1/8W
R1324	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1325	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1326	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1327	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R1328	0700036	CARBON FILM 4700HM+-5% 1/8W
R1329	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1330	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1331	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1332	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R1333	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1334	0700039	CARBON FILM 8200HM+-5% 1/8W
R1335	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1336	0700034	CARBON FILM 3300HM+-5% 1/8W
R1337	0700039	CARBON FILM 8200HM+-5% 1/8W
R1338	0700039	CARBON FILM 8200HM+-5% 1/8W
R1339	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1341	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1345	0700061	CARBON FILM 33KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R1346	0700061	CARBON FILM 33KOHM+-5% 1/8W
R1347	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1348	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1350	0700036	CARBON FILM 4700HM+-5% 1/8W
R1401	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1402	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1403	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1404	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1405	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1406	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1408	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1410	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1411	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1412	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1413	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1414	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R1415	01038323	CHIP RESISTOR 1200HM+-5% 0.1W
R1416	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1417	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1418	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R1419	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1420	01038653	CHIP RESISTOR 68KOHM+-5% 0.1W
R1421	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1422	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R1423	01038383	CHIP RESISTOR 390 OHM+-5% 0.1W
R1424	01038763	CHIP RESISTOR 560KOHM+-5% 0.1W
R1425	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R1426	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R1427	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1431	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1432	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1433	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1434	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R1435	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1436	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1441	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R1442	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1443	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1444	01038793	CHIP RESISTOR 1MOHM+-5% 0.1W
R1451	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1452	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1531	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1532	0700071	CARBON FILM 180KOHM+-5% 1/8W
R1533	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1534	0101772	METAL FILM 47KOHM+-1% 1/8W
R1535	0700077	CARBON FILM 560KOHM+-5% 1/8W
R1536	0101734	METAL FILM 33 OHM 1/8W
R1537	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1538	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1539L	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1539R	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R1540L	0700071	CARBON FILM 180KOHM+-5% 1/8W
R1540R	0700071	CARBON FILM 180KOHM+-5% 1/8W
R1541L	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1541R	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1542L	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1542R	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1543L	0700059	CARBON FILM 27KOHM+-5% 1/8W
R1543R	0700059	CARBON FILM 27KOHM+-5% 1/8W
R1544	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R1545	0700036	CARBON FILM 4700HM+-5% 1/8W
R1546L	0700065	CARBON FILM 68KOHM+-5% 1/8W
R1546R	0700065	CARBON FILM 68KOHM+-5% 1/8W
R1547L	0700056	CARBON FILM 15KOHM+-5% 1/8W
R1547R	0700056	CARBON FILM 15KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R1548L	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1548R	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R1549	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1550	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1551L	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1551R	0700067	CARBON FILM 100KOHM+-5% 1/8W
R1552	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1553	0700033	CARBON FILM 2700HM+-5% 1/8W
R1554	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1555	0101779	CHIP RESISTOR 680KOHM+-1% 1/8W
R1601	01038673	CHIP RESISTOR 100KOHM+-5% 0.1W
R1602	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1603	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1604	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1605	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1606	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1607	01038463	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R1608	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R1609	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1701	0700036	CARBON FILM 4700HM+-5% 1/8W
R1702	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1704	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1706	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R1710	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1711	0700054	CARBON FILM 10KOHM+-5% 1/8W
R1712	0700058	CARBON FILM 22KOHM+-5% 1/8W
R1713	0700062	CARBON FILM 39KOHM+-5% 1/8W
R1714	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1801	0700036	CARBON FILM 4700HM+-5% 1/8W (HKN, SWN)
R1802	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1803	0700069	CARBON FILM 150KOHM+-5% 1/8W (HKN, SWN)
R1804	0700034	CARBON FILM 3300HM+-5% 1/8W (HKN, SWN)
R1805	0700072	CARBON FILM 220KOHM+-5% 1/8W (HKN, SWN)
R1806	0700041	CARBON FILM 1.0KOHM+-5% 1/8W (HKN, SWN)
R1807	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1808	0700049	CARBON FILM 4.7KOHM+-5% 1/8W (HKN, SWN)
R1809	0700046	CARBON FILM 2.7KOHM+-5% 1/8W (HKN, SWN)
R1810	0700046	CARBON FILM 2.7KOHM+-5% 1/8W (HKN, SWN)
R1811	0700027	CARBON FILM 100OHM+-5% 1/8W (HKN, SWN)
R1812	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1813	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1814	0700034	CARBON FILM 3300HM+-5% 1/8W (HKN, SWN)
R1815	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1816	0700041	CARBON FILM 1.0KOHM+-5% 1/8W (HKN, SWN)
R1817	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1819	0700034	CARBON FILM 3300HM+-5% 1/8W (HKN, SWN)
R1820	0700041	CARBON FILM 1.0KOHM+-5% 1/8W (HKN, SWN)
R1821	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1822	0700053	CARBON FILM 8.2KOHM+-5% 1/8W (HKN, SWN)
R1823	0700041	CARBON FILM 1.0KOHM+-5% 1/8W (HKN, SWN)
R1824	0700041	CARBON FILM 1.0KOHM+-5% 1/8W (HKN, SWN)
R1825	0700042	CARBON FILM 1.2KOHM+-5% 1/8W (HKN, SWN)
R1826	0700053	CARBON FILM 8.2KOHM+-5% 1/8W (HKN, SWN)
R1827	0700042	CARBON FILM 1.2KOHM+-5% 1/8W (HKN, SWN)
R1828	0700036	CARBON FILM 4700HM+-5% 1/8W (HKN, SWN)
R1829	0700028	CARBON FILM 1200HM+-5% 1/8W (HKN, SWN)
R1831	0700058	CARBON FILM 22KOHM+-5% 1/8W (HKN, SWN)
R1833	0700049	CARBON FILM 4.7KOHM+-5% 1/8W (HKN, SWN)
R1834	0700049	CARBON FILM 4.7KOHM+-5% 1/8W (HKN, SWN)
R1835	0700057	CARBON FILM 18KOHM+-5% 1/8W (HKN, SWN)
R1836	0700057	CARBON FILM 18KOHM+-5% 1/8W (HKN, SWN)
R1840	0700054	CARBON FILM 10KOHM+-5% 1/8W (HKN, SWN)
R1841	0700049	CARBON FILM 4.7KOHM+-5% 1/8W (HKN, SWN)
R1842	0700049	CARBON FILM 4.7KOHM+-5% 1/8W (HKN, SWN)
R1843	0700041	CARBON FILM 1.0KOHM+-5% 1/8W (HKN, SWN)

SYMBOL-NO	P-NO	DESCRIPTION
R1844	0700063	CARBON FILM 47KOHM+-5% 1/8W(HKN, SWN)
R1851	0700059	CARBON FILM 27KOHM+-5% 1/8W(HKN, SWN)
R1852	0700046	CARBON FILM 2.7KOHM+-5% 1/8W(HKN, SWN)
R1853	0700053	CARBON FILM 8.2KOHM+-5% 1/8W(HKN, SWN)
R1854	0700039	CARBON FILM 8200HM+-5% 1/8W(HKN, SWN)
R1855	0700059	CARBON FILM 27KOHM+-5% 1/8W(HKN, SWN)
R1856	0700046	CARBON FILM 2.7KOHM+-5% 1/8W(HKN, SWN)
R1857	0700053	CARBON FILM 8.2KOHM+-5% 1/8W(HKN, SWN)
R1858	0700039	CARBON FILM 8200HM+-5% 1/8W(HKN, SWN)
R1901	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R1902	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R1903	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R1909	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R1910	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R201	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R202	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R205	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R206	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R207	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R208	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R211	0103839	CHIP RESISTOR 4700HM+-5% 0.1W
R212	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R213	0103839	CHIP RESISTOR 4700HM+-5% 0.1W
R214	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R215	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R216	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R217	01038503	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R218	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R219	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R224	01038333	CHIP RESISTOR 150 OHM+-5% 0.1W
R225	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R226	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R227	0103834	CHIP RESISTOR 1800HM+-5% 0.1W
R228	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R229	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R230	0103839	CHIP RESISTOR 4700HM+-5% 0.1W
R231	01038393	CHIP RESISTOR 4700HM+-5% 0.1W
R232	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R233	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R234	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R235	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R236	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R237	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R238	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R239	01038483	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R240	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R241	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R242	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R243	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R244	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R245	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R246	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R247	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R248	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R2501	0700028	CARBON FILM 1200HM+-5% 1/8W
R2502	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2503	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2504	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2505	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R2506	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R2507	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R251	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R252	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R253	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R254	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R255	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R256	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R257	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R258	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R259	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R260	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R261	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R262	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R263	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R267	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R268	01038633	CHIP RESISTOR 47KOHM+-5% 0.1W
R269	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R2701	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2702	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2703	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2704	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R271	01038353	CHIP RESISTOR 220 OHM+-5% 0.1W
R272	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R274	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R275	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R276	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2851	0700074	CARBON FILM 330KOHM+-5% 1/8W
R2852	0700057	CARBON FILM 18KOHM+-5% 1/8W
R2853	0101833	CARBON FILM 1KOHM+-5% 1/4W
R2854	0101833	CARBON FILM 1KOHM+-5% 1/4W
R2856	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2857	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2858	0101843	CARBON FILM 6.8KOHM+-5% 1/4W
R2860	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2861	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R2862	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R2863	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R2864	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2865	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2866	0700058	CARBON FILM 22KOHM+-5% 1/8W
R2867	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R2868	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R2869	0700058	CARBON FILM 22KOHM+-5% 1/8W
R2870	0101832	CARBON FILM 820 OHM+-5% 1/4W
R2871	0101832	CARBON FILM 820 OHM+-5% 1/4W
R2872	0101839	CARBON FILM 3.3KOHM+-5% 1/4W
R2874	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2876	0700054	CARBON FILM 10KOHM+-5% 1/8W
R2877	0700063	CARBON FILM 47KOHM+-5% 1/8W
R301	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R302	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R303	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R304	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R305	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R306	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R307	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R308	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R309	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R310	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R311	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R312	01038563	CHIP RESISTOR 12KOHM+-5% 0.1W
R313	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R314	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R315	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R316	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R317	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R318	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R319	01038493	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R320	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R321	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R322	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R323	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R324	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R325	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R326	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R327	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R328	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R329	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R330	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R331	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R336	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R337	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R338	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R339	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R340	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R341	01038373	CHIP RESISTOR 330 OHM+-5% 0.1W
R342	01038623	CHIP RESISTOR 39KOHM+-5% 0.1W
R343	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R344	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R345	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R346	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R347	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R348	01038443	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R349	01038363	CHIP RESISTOR 270 OHM+-5% 0.1W
R350	01038523	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R351	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R352	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R353	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R354	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R355	01038413	CHIP RESISTOR 680 OHM+-5% 0.1W
R356	01038403	CHIP RESISTOR 560 OHM+-5% 0.1W
R357	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R358	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R359	01038553	CHIP RESISTOR 10KOHM+-5% 0.1W
R360	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R361	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R362	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R363	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R364	01038603	CHIP RESISTOR 27KOHM+-5% 0.1W
R365	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R366	01038583	CHIP RESISTOR 18KOHM+-5% 0.1W
R367	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R368	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R369	01038613	CHIP RESISTOR 33KOHM+-5% 0.1W
R371	01038573	CHIP RESISTOR 15KOHM+-5% 0.1W
R372	01038543	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R381	01038593	CHIP RESISTOR 22KOHM+-5% 0.1W
R382	0103830	CHIP RESISTOR 82OHM+-5% 0.1W
R383	01038473	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R384	01038693	CHIP RESISTOR 150KOHM+-5% 0.1W
R385	01038433	CHIP RESISTOR 1KOHM+-5% 0.1W
R401	0700014	CARBON FILM 10OHM+-5% 1/8W
R402	0700064	CARBON FILM 56KOHM+-5% 1/8W
R403	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R404	0700038	CARBON FILM 680OHM+-5% 1/8W
R406	0700036	CARBON FILM 470OHM+-5% 1/8W
R407	0700059	CARBON FILM 27KOHM+-5% 1/8W
R408	0700059	CARBON FILM 27KOHM+-5% 1/8W
R409	0700058	CARBON FILM 22KOHM+-5% 1/8W
R410	0700058	CARBON FILM 22KOHM+-5% 1/8W
R411	0700058	CARBON FILM 22KOHM+-5% 1/8W
R412	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R413	0700064	CARBON FILM 56KOHM+-5% 1/8W
R414	0700032	CARBON FILM 220 OHM+-5% 1/8W
R415	0700072	CARBON FILM 220KOHM+-5% 1/8W
R416	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R417	0700054	CARBON FILM 10KOHM+-5% 1/8W
R418	0700054	CARBON FILM 10KOHM+-5% 1/8W
R419	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R420	0700043	CARBON FILM 1.5KOHM+-5% 1/8W
R421	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R422	0700044	CARBON FILM 1.8KOHM+-5% 1/8W
R424	0700062	CARBON FILM 39KOHM+-5% 1/8W
R426	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R429	0700059	CARBON FILM 27KOHM+-5% 1/8W
R430	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R432	0700067	CARBON FILM 100KOHM+-5% 1/8W
R433	0700036	CARBON FILM 470OHM+-5% 1/8W
R4501	0700033	CARBON FILM 270OHM+-5% 1/8W
R4502	0700028	CARBON FILM 120OHM+-5% 1/8W
R4503	1109023	METAL FILM 75 OHM+-50% 1/8W
R4504	1109023	METAL FILM 75 OHM+-50% 1/8W
R4505	0700028	CARBON FILM 120OHM+-5% 1/8W
R451	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R452	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R453	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R461	0700058	CARBON FILM 22KOHM+-5% 1/8W
R462	0700058	CARBON FILM 22KOHM+-5% 1/8W
R463	0700054	CARBON FILM 10KOHM+-5% 1/8W
R466	0700057	CARBON FILM 18KOHM+-5% 1/8W
R468	0700055	CARBON FILM 12KOHM+-5% 1/8W
R469	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R470	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R502	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R503L	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R503R	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R504L	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R504R	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R505	0700054	CARBON FILM 10KOHM+-5% 1/8W
R506	0700056	CARBON FILM 15KOHM+-5% 1/8W
R507	0700062	CARBON FILM 39KOHM+-5% 1/8W
R508	0700067	CARBON FILM 100KOHM+-5% 1/8W
R510	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R511	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R512	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R514L	0700058	CARBON FILM 22KOHM+-5% 1/8W
R514R	0700058	CARBON FILM 22KOHM+-5% 1/8W
R515L	0101766	CHIP RESISTOR 12KOHM+-1% 1/8W
R515R	0101732	METAL FILM 8.2KOHM
R516L	0700067	CARBON FILM 100KOHM+-5% 1/8W
R516R	0700067	CARBON FILM 100KOHM+-5% 1/8W
R517L	0700057	CARBON FILM 18KOHM+-5% 1/8W
R517R	0700057	CARBON FILM 18KOHM+-5% 1/8W
R518L	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R518R	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R519L	0700054	CARBON FILM 10KOHM+-5% 1/8W
R519R	0700054	CARBON FILM 10KOHM+-5% 1/8W
R520L	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R520R	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R521L	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R521R	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R522L	0700037	CARBON FILM 560OHM+-5% 1/8W
R522R	0700037	CARBON FILM 560OHM+-5% 1/8W
R523L	0700039	CARBON FILM 820OHM+-5% 1/8W
R523R	0700039	CARBON FILM 820OHM+-5% 1/8W
R524L	0700038	CARBON FILM 680OHM+-5% 1/8W
R524R	0700038	CARBON FILM 680OHM+-5% 1/8W
R525L	0101732	METAL FILM 8.2KOHM
R525R	0101766	CHIP RESISTOR 12KOHM+-1% 1/8W
R527L	0700054	CARBON FILM 10KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R527R	0700054	CARBON FILM 10KOHM+-5% 1/8W
R528L	0700036	CARBON FILM 4700HM+-5% 1/8W
R528R	0700036	CARBON FILM 4700HM+-5% 1/8W
R529L	0700054	CARBON FILM 10KOHM+-5% 1/8W
R529R	0700054	CARBON FILM 10KOHM+-5% 1/8W
R530L	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R530R	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R531	0700054	CARBON FILM 10KOHM+-5% 1/8W
R532	0700054	CARBON FILM 10KOHM+-5% 1/8W
R537L	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R537R	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R542	0700054	CARBON FILM 10KOHM+-5% 1/8W
R543	0700058	CARBON FILM 22KOHM+-5% 1/8W
R544	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R552L	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R552R	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R553L	0700067	CARBON FILM 100KOHM+-5% 1/8W
R553R	0700067	CARBON FILM 100KOHM+-5% 1/8W
R556L	0700063	CARBON FILM 47KOHM+-5% 1/8W
R556R	0700063	CARBON FILM 47KOHM+-5% 1/8W
R557	0700067	CARBON FILM 100KOHM+-5% 1/8W
R558	0700058	CARBON FILM 22KOHM+-5% 1/8W
R559	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R560L	0700056	CARBON FILM 15KOHM+-5% 1/8W
R560R	0700056	CARBON FILM 15KOHM+-5% 1/8W
R561L	0700067	CARBON FILM 100KOHM+-5% 1/8W
R561R	0700067	CARBON FILM 100KOHM+-5% 1/8W
R603	0700038	CARBON FILM 6800HM+-5% 1/8W
R604	0700038	CARBON FILM 6800HM+-5% 1/8W
R605	0700063	CARBON FILM 47KOHM+-5% 1/8W
R606	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R607	0700072	CARBON FILM 220KOHM+-5% 1/8W
R608	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R609	0700063	CARBON FILM 47KOHM+-5% 1/8W
R610	0700054	CARBON FILM 10KOHM+-5% 1/8W
R611	0700062	CARBON FILM 39KOHM+-5% 1/8W
R612	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R613	0700073	CARBON FILM 270KOHM+-5% 1/8W
R614	0700061	CARBON FILM 33KOHM+-5% 1/8W
R615	0700064	CARBON FILM 56KOHM+-5% 1/8W
R616	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R617	0700077	CARBON FILM 560KOHM+-5% 1/8W
R618	0700076	CARBON FILM 470KOHM+-5% 1/8W
R619	0700063	CARBON FILM 47KOHM+-5% 1/8W
R620	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R621	0700067	CARBON FILM 100KOHM+-5% 1/8W
R622	0700064	CARBON FILM 56KOHM+-5% 1/8W
R623	0700066	CARBON FILM 82KOHM+-5% 1/8W
R624	0700081	CARBON FILM 1.0MOHM+-5% 1/8W
R625	0700069	CARBON FILM 150KOHM+-5% 1/8W
R627	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R630	0700062	CARBON FILM 39KOHM+-5% 1/8W
R631	0700055	CARBON FILM 12KOHM+-5% 1/8W
R632	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R633	0700036	CARBON FILM 4700HM+-5% 1/8W
R634	0101741	CHIP RESISTOR 10 OHM+-1% 1/8W
R635	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R636	0101745	CHIP RESISTOR 100 OHM+-1% 1/8W
R637	0101745	CHIP RESISTOR 100 OHM+-1% 1/8W
R638	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R639	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R640	0101809	CARBON FILM 100HM+-5% 1/4W
R641	0101809	CARBON FILM 100HM+-5% 1/4W
R642	0101809	CARBON FILM 100HM+-5% 1/4W
R643	0101883	CARBON FILM 1.0 OHM+-5% 1/4W
R644	0101883	CARBON FILM 1.0 OHM+-5% 1/4W
R645	0700079	CARBON FILM 820KOHM+-5% 1/8W
R646	0700063	CARBON FILM 47KOHM+-5% 1/8W
R647	0700038	CARBON FILM 6800HM+-5% 1/8W
R648	0700023	CARBON FILM 470HM+-5% 1/8W
R649	0700023	CARBON FILM 470HM+-5% 1/8W
R650	0700067	CARBON FILM 100KOHM+-5% 1/8W
R652	0700063	CARBON FILM 47KOHM+-5% 1/8W
R654	0700077	CARBON FILM 560KOHM+-5% 1/8W
R657	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R659	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R660	0700077	CARBON FILM 560KOHM+-5% 1/8W
R661	0700055	CARBON FILM 12KOHM+-5% 1/8W
R662	0700058	CARBON FILM 22KOHM+-5% 1/8W
R663	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R664	0700056	CARBON FILM 15KOHM+-5% 1/8W
R665	0700055	CARBON FILM 12KOHM+-5% 1/8W
R666	0700074	CARBON FILM 330KOHM+-5% 1/8W
R667	0700074	CARBON FILM 330KOHM+-5% 1/8W
R701	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R702	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R703	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R704	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R705	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R706	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R707	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R708	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R709	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R712	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R713	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R714	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R715	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R716	0700061	CARBON FILM 33KOHM+-5% 1/8W
R717	0700061	CARBON FILM 33KOHM+-5% 1/8W
R718	0700061	CARBON FILM 33KOHM+-5% 1/8W
R719	0700061	CARBON FILM 33KOHM+-5% 1/8W
R721	0700033	CARBON FILM 2700HM+-5% 1/8W
R722	0700061	CARBON FILM 33KOHM+-5% 1/8W
R724	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R725	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R726	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R727	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R728	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R729	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R731	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R732	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R733	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R734	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R737	0101868	CARBON FILM 4.7MOHM+-5% 1/4W
R738	0700072	CARBON FILM 220KOHM+-5% 1/8W
R739	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R740	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R741	0700032	CARBON FILM 220 OHM+-5% 1/8W
R743	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R746	0700063	CARBON FILM 47KOHM+-5% 1/8W
R749	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R750	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R752	0700054	CARBON FILM 10KOHM+-5% 1/8W
R754	0700061	CARBON FILM 33KOHM+-5% 1/8W
R755	0700027	CARBON FILM 1000HM+-5% 1/8W
R756	0700027	CARBON FILM 1000HM+-5% 1/8W
R757	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R758	0700058	CARBON FILM 22KOHM+-5% 1/8W
R759	0700053	CARBON FILM 8.2KOHM+-5% 1/8W
R760	0700061	CARBON FILM 33KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R768	0700063	CARBON FILM 47KOHM+-5% 1/8W
R770	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R771	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R772	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R773	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R774	0700063	CARBON FILM 47KOHM+-5% 1/8W
R775	0700063	CARBON FILM 47KOHM+-5% 1/8W
R776	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R777	0700054	CARBON FILM 10KOHM+-5% 1/8W
R778	0700034	CARBON FILM 330OHM+-5% 1/8W
R780	0700061	CARBON FILM 33KOHM+-5% 1/8W
R781	0700054	CARBON FILM 10KOHM+-5% 1/8W
R801	0101838	CHIP RESISTOR 2.7KOHM+-5% 1/4W
R802	0700067	CARBON FILM 100KOHM+-5% 1/8W
R803	0700027	CARBON FILM 1000HM+-5% 1/8W
R804	0700079	CARBON FILM 820KOHM+-5% 1/8W
R805	0700067	CARBON FILM 100KOHM+-5% 1/8W
R806	0700027	CARBON FILM 1000HM+-5% 1/8W
R807	0700079	CARBON FILM 820KOHM+-5% 1/8W
R808	0700027	CARBON FILM 1000HM+-5% 1/8W
R809	0700059	CARBON FILM 27KOHM+-5% 1/8W
R810	0700062	CARBON FILM 39KOHM+-5% 1/8W
R811	0700036	CARBON FILM 4700HM+-5% 1/8W
R812	0700054	CARBON FILM 10KOHM+-5% 1/8W
R813	0700058	CARBON FILM 22KOHM+-5% 1/8W
R814	0700054	CARBON FILM 10KOHM+-5% 1/8W
R815	0700054	CARBON FILM 10KOHM+-5% 1/8W
R816	0700058	CARBON FILM 22KOHM+-5% 1/8W
R817	0700063	CARBON FILM 47KOHM+-5% 1/8W
R818	0700075	CARBON FILM 390KOHM+-5% 1/8W
R819	0700054	CARBON FILM 10KOHM+-5% 1/8W
R820	0700027	CARBON FILM 1000HM+-5% 1/8W
R821	0700054	CARBON FILM 10KOHM+-5% 1/8W
R822	0700054	CARBON FILM 10KOHM+-5% 1/8W
R823	0700054	CARBON FILM 10KOHM+-5% 1/8W
R824	0700058	CARBON FILM 22KOHM+-5% 1/8W
R825	0700063	CARBON FILM 47KOHM+-5% 1/8W
R826	0700063	CARBON FILM 47KOHM+-5% 1/8W
R827	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R828	0700038	CARBON FILM 6800HM+-5% 1/8W
R829	0700042	CARBON FILM 1.2KOHM+-5% 1/8W
R851	0101842	CHIP RESISTOR 5.6KOHM+-5% 1/4W
R852	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R853	0700047	CARBON FILM 3.3KOHM+-5% 1/8W
R855	0700054	CARBON FILM 10KOHM+-5% 1/8W
R856	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R857	0113295	CARBON FILM 470 OHM+-5% 1/2W
R858	0700054	CARBON FILM 10KOHM+-5% 1/8W
R859	0700063	CARBON FILM 47KOHM+-5% 1/8W
R860	0101734	METAL FILM 33 OHM 1/8W
R861	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R862	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R864	0700068	CARBON FILM 120KOHM+-5% 1/8W
R866	0101764	CHIP RESISTOR 5.6KOHM+-1% 1/8W
R867	0101762	CHIP RESISTOR 3.9KOHM+-1% 1/8W
R868	0700068	CARBON FILM 120KOHM+-5% 1/8W
R871	0170474	FUSE RESISTOR 100HM+-5% 1/4W
R873	0101771	CHIP RESISTOR 39KOHM+-1% 1/8W
R874	0101771	CHIP RESISTOR 39KOHM+-1% 1/8W
R875	0700062	CARBON FILM 39KOHM+-5% 1/8W
R876	0700062	CARBON FILM 39KOHM+-5% 1/8W
R879	0700052	CARBON FILM 6.8KOHM+-5% 1/8W
R881	0700035	CARBON FILM 3900HM+-5% 1/8W
R901	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R902	0700061	CARBON FILM 33KOHM+-5% 1/8W

SYMBOL-NO	P-NO	DESCRIPTION
R904	0700061	CARBON FILM 33KOHM+-5% 1/8W
R905	0700051	CARBON FILM 5.6KOHM+-5% 1/8W
R906	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R907	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R917	0700062	CARBON FILM 39KOHM+-5% 1/8W
R920	0700062	CARBON FILM 39KOHM+-5% 1/8W
R922	0700067	CARBON FILM 100KOHM+-5% 1/8W
R923	0101824	CARBON FILM 180 OHM+-5% 1/4W
R924	0700067	CARBON FILM 100KOHM+-5% 1/8W
R925	0101826	CARBON FILM 2700HM+-5% 1/8W
R926	0700061	CARBON FILM 33KOHM+-5% 1/8W
R927	0700066	CARBON FILM 82KOHM+-5% 1/8W
R930	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R931	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R932	0700063	CARBON FILM 47KOHM+-5% 1/8W
R933	0700063	CARBON FILM 47KOHM+-5% 1/8W
R934	0700063	CARBON FILM 47KOHM+-5% 1/8W
R935	0700054	CARBON FILM 10KOHM+-5% 1/8W
R936	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R937	0700056	CARBON FILM 15KOHM+-5% 1/8W
R938	0700061	CARBON FILM 33KOHM+-5% 1/8W
R939	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R940	0700063	CARBON FILM 47KOHM+-5% 1/8W
R946	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R947	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R948	0700048	CARBON FILM 3.9KOHM+-5% 1/8W
R949	0700063	CARBON FILM 47KOHM+-5% 1/8W
R951	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R952	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R955	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R956	0700054	CARBON FILM 10KOHM+-5% 1/8W
R958	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R961	0700046	CARBON FILM 2.7KOHM+-5% 1/8W
R962	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R965	0700063	CARBON FILM 47KOHM+-5% 1/8W
R966	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
R967	0700045	CARBON FILM 2.2KOHM+-5% 1/8W
R969	0700054	CARBON FILM 10KOHM+-5% 1/8W
R970	0700054	CARBON FILM 10KOHM+-5% 1/8W
R971	0700063	CARBON FILM 47KOHM+-5% 1/8W
R972	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R973	0700049	CARBON FILM 4.7KOHM+-5% 1/8W
R975	0700041	CARBON FILM 1.0KOHM+-5% 1/8W
RT1201	5030004	SEMI VARIABLE 1KOHM
RT1301	5006238	SEMI VARIABLE 22KOHM(J) [MJA]
RT1301	5030006	SEMI VARIABLE 4.7KOHM
RT1302	5006237	SEMI VARIABLE 10KOHM(J) [MJA]
RT301	5030084	TRIMMER 1KOHM
RT302	5030083	SEMI VARIABLE 470 OHM
RT303	5030087	SEMI VARIABLE 10KOHM
RT401	5030012	SEMI VARIABLE 220KOHM
RT501L	5035077	SEMI VARIABLE 10KOHM
RT501R	5035077	SEMI VARIABLE 10KOHM
RT502L	5006239	SEMI VARIABLE 47KOHM
RT502R	5006239	SEMI VARIABLE 47KOHM
RT503L	5035079	SEMI VARIABLE 47KOHM
RT503R	5035079	SEMI VARIABLE 47KOHM
RT601	5030012	SEMI VARIABLE 220KOHM

SEMI-CONDUCTORS

D 141	5380933	LED GL-451
D1201	5339141	DIODE 1SS270
D1301	5339141	DIODE 1SS270
D1302	5339141	DIODE 1SS270

SYMBOL-NO	P-NO	DESCRIPTION
D1303	5339141	DIODE 1SS270
D1304	5339141	DIODE 1SS270
D1305	5339141	DIODE 1SS270
D1401	5328321	DIODE MA151K (MH)
D1402	5339551	DIODE SS1J4
D1531	5339141	DIODE 1SS270
D1532	5339141	DIODE 1SS270
D1601	5328301	DIODE MA151WK (MT)
D1701	5339141	DIODE 1SS270
D1702	5339141	DIODE 1SS270
D1801	5339141	DIODE 1SS270(HKN, SWN)
D1802	5339141	DIODE 1SS270(HKN, SWN)
D1803	5339141	DIODE 1SS270(HKN, SWN)
D1804	5339141	DIODE 1SS270(HKN, SWN)
D1805	5339141	DIODE 1SS270(HKN, SWN)
D1806	5339141	DIODE 1SS270(HKN, SWN)
D1807	5339141	DIODE 1SS270(HKN, SWN)
D1808	5339141	DIODE 1SS270(HKN, SWN)
D1809	5339141	DIODE 1SS270(HKN, SWN)
D1810	5339141	DIODE 1SS270
D1811	5339141	DIODE 1SS270(HKN, SWN)
D1812	5336301	DIODE 1SV111(HKN, SWN)
D1901	5339141	DIODE 1SS270
D201	5328303	DIODE MA152WK (MU)
D2551	5339381	DIODE ERA81-004
D2701	5339141	DIODE 1SS270
D2702	5339141	DIODE 1SS270
D2703	5339141	DIODE 1SS270
D2704	5339141	DIODE 1SS270
D2705	5339141	DIODE 1SS270
D2706	5339141	DIODE 1SS270
D2707	5339141	DIODE 1SS270
D2710	5381214	LED SEL2413E
D2711	5381211	LED SEL-2213C
D2712	5381211	LED SEL-2213C
D2713	5381211	LED SEL-2213C
D2714	5381211	LED SEL-2213C
D2851	5339171	DIODE 1SS130
D2852	5339171	DIODE 1SS130
D2853	5339171	DIODE 1SS130
D2854	5339171	DIODE 1SS130
D2861	5339131	DIODE 1SS254
D2865	5339381	DIODE ERA81-004
D301	5328321	DIODE MA151K (MH)
D302	5328321	DIODE MA151K (MH)
D303	5328321	DIODE MA151K (MH)
D304	5328321	DIODE MA151K (MH)
D305	5328321	DIODE MA151K (MH)
D306	5328321	DIODE MA151K (MH)
D351	5328321	DIODE MA151K (MH)
D401	5339141	DIODE 1SS270
D402	5339141	DIODE 1SS270
D403	5339141	DIODE 1SS270
D404	53390213	DIODE 1SS133
D405	5339141	DIODE 1SS270
D406	5339141	DIODE 1SS270
D407	5339141	DIODE 1SS270
D409	5339141	DIODE 1SS270
D410	5339141	DIODE 1SS270
D411	5339141	DIODE 1SS270
D412	5339141	DIODE 1SS270
D453	5339141	DIODE 1SS270
D501	5339141	DIODE 1SS270
D602	5339141	DIODE 1SS270
D604	5339141	DIODE 1SS270

SYMBOL-NO	P-NO	DESCRIPTION
D605	5339141	DIODE 1SS270
D606	5339141	DIODE 1SS270
D701	5339141	DIODE 1SS270
D702	5339141	DIODE 1SS270
D703	5339141	DIODE 1SS270
D704	5339141	DIODE 1SS270
D705	5339141	DIODE 1SS270
D706	5339141	DIODE 1SS270
D707	5339141	DIODE 1SS270
D708	5339141	DIODE 1SS270
D709	5339141	DIODE 1SS270
D713	5339141	DIODE 1SS270
D714	5339141	DIODE 1SS270
D715	5339141	DIODE 1SS270
D718	5339141	DIODE 1SS270
D719	5339141	DIODE 1SS270
D720	5339141	DIODE 1SS270
D721	5339141	DIODE 1SS270
D722	5381001	LED SLR-34URC5
D727	5339141	DIODE 1SS270
D728	5339141	DIODE 1SS270
D770	5339141	DIODE 1SS270
D771	5339141	DIODE 1SS270
D801	5339141	DIODE 1SS270
D802	5339141	DIODE 1SS270
D851	5382751	DIODE D4SBS6
D852	5339381	DIODE ERA81-004
D853	5339381	DIODE ERA81-004
D854	5339381	DIODE ERA81-004
D855	5339381	DIODE ERA81-004
D856	5332261	DIODE ERB81-004
D857	5332261	DIODE ERB81-004
D859	5339131	DIODE 1SS254
D861	5330501	DIODE U0-5B SI 60HZ 3MW
D862	5330501	DIODE U0-5B SI 60HZ 3MW
D863	5339231	DIODE 1SR35-100A
D902	5339551	DIODE SS1J4
D903	5339141	DIODE 1SS270
D904	5339141	DIODE 1SS270
D906	5339141	DIODE 1SS270
D911	5339141	DIODE 1SS270
D912	5339551	DIODE SS1J4
D913	5339141	DIODE 1SS270
D914	5339551	DIODE SS1J4
IC 141	5333954	IC ON2170R
IC 142	5333953	IC ON2170(Q)
IC1203	1342031	IC NJM2248S
IC1204	1345911	IC TL8828P
IC1205	5362741	IC BU4011B
IC1301	1340631	IC CXA1519S(TI)(J)[MJA]
IC1301	1361531	IC M51645P
IC1401	1342289	IC M50558-108SP
IC1402	1340021	IC NJM2229S
IC1403	5305241	IC SN74HC00NS
IC1531	5350607	IC RC4558
IC1532	5350607	IC RC4558
IC1801	1342541	IC TA8662N
IC1802	1367341	IC CF70124C
IC1803	1343511	IC TDA1543
IC1805	5364761	IC BA4560
IC1806	5366981	IC M5201L
IC1807	5366981	IC M5201L
IC1901	1345333	IC M50927-218SP
IC201	1373793	IC HT7417B
IC202	1362001	IC LC8992

SYMBOL-NO	P-NO	DESCRIPTION
IC301	1361371	IC M52063SP
IC351	5366642	IC XRA7025L
IC401	1341493	IC XRA7767AS
IC4501	5369431	IC LA7016
IC501	1351503	IC XRA7703K1-VP
IC502	5366911	IC BA6138
IC601	1360042	IC HD49741ANT
IC602	1360072	IC XRA6459P1
IC701	1345625	IC M38103M6-108SP
IC702	1367581	IC M6M80041P
IC703	1340002	IC S-8053ALB
IC801	5359901	IC UPD4066C
IC851	1362011	IC TL1451A
IC852	1322691	TRANSISTOR 2SJ222
IC853	1373351	MODULE HT7317
IC901	1359635	IC UPD75516GF-405
IC902	5300795	IC XRA6209U4
IC904	1340112	IC PST520C
Q 141	5324661	TRANSISTOR PT-483F1
Q 142	5324661	TRANSISTOR PT-483F1
Q1201	5327063	TRANSISTOR 2SC1740S
Q1202	5327063	TRANSISTOR 2SC1740S
Q1225	5327063	TRANSISTOR 2SC1740S
Q1226	5327063	TRANSISTOR 2SC1740S
Q1227	5327063	TRANSISTOR 2SC1740S
Q1228	5327021	TRANSISTOR 2SA844CD
Q1229	5327021	TRANSISTOR 2SA844CD
Q1230	5327075	TRANSISTOR XDC144ES
Q1231	5327076	TRANSISTOR XDA144ES
Q1235	5327063	TRANSISTOR 2SC1740S
Q1237	5327075	TRANSISTOR XDC144ES
Q1301	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1302	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1303	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1304	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1305	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1306	5324631	TRANSISTOR 2SA1390C
Q1307	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1308	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1309	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1310	5327076	TRANSISTOR XDA144ES
Q1311	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1312	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1313	5327075	TRANSISTOR XDC144ES
Q1401	5326091	TRANSISTOR 2SD1757KR/KS
Q1402	5328962	TRANSISTOR 2SA1037K
Q1403	5328972	TRANSISTOR 2SC2412K-BRT
Q1404	5328796	TRANSISTOR XDC144EK
Q1405	5328796	TRANSISTOR XDC144EK
Q1406	5328972	TRANSISTOR 2SC2412K-BRT
Q1407	5328962	TRANSISTOR 2SA1037K
Q1408	5328972	TRANSISTOR 2SC2412K-BRT
Q1531L	5327063	TRANSISTOR 2SC1740S
Q1531R	5327063	TRANSISTOR 2SC1740S
Q1532L	5327063	TRANSISTOR 2SC1740S
Q1532R	5327063	TRANSISTOR 2SC1740S
Q1533	5327063	TRANSISTOR 2SC1740S
Q1534	1320004	TRANSISTOR 2SA854SQR
Q1535	5327063	TRANSISTOR 2SC1740S
Q1601	5328797	TRANSISTOR XDA144EK
Q1602	5328721	TRANSISTOR 2SD1328
Q1801	5327021	TRANSISTOR 2SA844CD
Q1802	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1803	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1804	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1805	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q1806	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q201	5328971	TRANSISTOR 2SC2412KBRST
Q202	5328971	TRANSISTOR 2SC2412KBRST
Q203	5328971	TRANSISTOR 2SC2412KBRST
Q204	5328971	TRANSISTOR 2SC2412KBRST
Q205	5328796	TRANSISTOR XDC144EK
Q206	5328796	TRANSISTOR XDC144EK
Q207	5328971	TRANSISTOR 2SC2412KBRST
Q208	5328796	TRANSISTOR XDC144EK
Q209	5328971	TRANSISTOR 2SC2412KBRST
Q210	5328971	TRANSISTOR 2SC2412KBRST
Q211	5328796	TRANSISTOR XDC144EK
Q212	5328796	TRANSISTOR XDC144EK
Q213	5328971	TRANSISTOR 2SC2412KBRST
Q214	5328971	TRANSISTOR 2SC2412KBRST
Q221	5328971	TRANSISTOR 2SC2412KBRST
Q222	5328251	TRANSISTOR 2SA1122-CD
Q223	5326101	TRANSISTOR FMW1
Q224	5328971	TRANSISTOR 2SC2412KBRST
Q225	5328251	TRANSISTOR 2SA1122-CD
Q226	5328971	TRANSISTOR 2SC2412KBRST
Q227	5328796	TRANSISTOR XDC144EK
Q2501	1320012	TRANSISTOR 2SA933 (S, R)
Q2502	1320012	TRANSISTOR 2SA933 (S, R)
Q2503	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q2851	5327031	TRANSISTOR 2SA673C
Q2853	1321341	TRANISITOR 2SD1765
Q2855	5327261	TRANSISTOR 2SB1326(Q)
Q2856	1321341	TRANISITOR 2SD1765
Q2857	5327261	TRANSISTOR 2SB1326(Q)
Q2859	5327021	TRANSISTOR 2SA844CD
Q2861	5327021	TRANSISTOR 2SA844CD
Q2862	5327061	TRANSISTOR 2SC1740S-ST
Q2863	5324862	TRANSISTOR 2SD2061
Q2864	5327061	TRANSISTOR 2SC1740S-ST
Q301	5328251	TRANSISTOR 2SA1122-CD
Q302	5328796	TRANSISTOR XDC144EK
Q303	5328796	TRANSISTOR XDC144EK
Q304	5328971	TRANSISTOR 2SC2412KBRST
Q305	5328971	TRANSISTOR 2SC2412KBRST
Q306	5328796	TRANSISTOR XDC144EK
Q307	5328971	TRANSISTOR 2SC2412KBRST
Q308	5328796	TRANSISTOR XDC144EK
Q309	5328796	TRANSISTOR XDC144EK
Q311	5328797	TRANSISTOR XDA144EK
Q312	5328971	TRANSISTOR 2SC2412KBRST
Q313	5328971	TRANSISTOR 2SC2412KBRST
Q314	5328971	TRANSISTOR 2SC2412KBRST
Q316	5328971	TRANSISTOR 2SC2412KBRST
Q317	5328971	TRANSISTOR 2SC2412KBRST
Q318	5328971	TRANSISTOR 2SC2412KBRST
Q319	5328971	TRANSISTOR 2SC2412KBRST
Q321	5328796	TRANSISTOR XDC144EK
Q322	5328971	TRANSISTOR 2SC2412KBRST
Q323	5328796	TRANSISTOR XDC144EK
Q324	5328971	TRANSISTOR 2SC2412KBRST
Q325	5328797	TRANSISTOR XDA144EK
Q326	5328796	TRANSISTOR XDC144EK
Q403	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q406	5327101	TRANSISTOR 2SC3553(B/C)
Q407	5327031	TRANSISTOR 2SA673C
Q4501	5324631	TRANSISTOR 2SA1390C
Q501L	5327031	TRANSISTOR 2SA673C
Q501R	5327031	TRANSISTOR 2SA673C

SYMBOL-NO	P-NO	DESCRIPTION
Q502L	5327063	TRANSISTOR 2SC1740S
Q502R	5327063	TRANSISTOR 2SC1740S
Q503	5327001	TRANSISTOR 2SC458CD
Q504	5327063	TRANSISTOR 2SC1740S
Q602	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q604	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q605	5327062	TRANSISTOR 2SC1740SR(2SC1740S OR R)
Q608	1320012	TRANSISTOR 2SA933 (S, R)
Q609	1320012	TRANSISTOR 2SA933 (S, R)
Q702	5327061	TRANSISTOR 2SC1740S-ST
Q704	5327061	TRANSISTOR 2SC1740S-ST
Q808	5320613	TRANSISTOR 2SC1213C SILICON 80MHZ 0.4W
Q810	5327062	TRANSISTOR 2SC1740SR(HKN, SWN)
Q811	5327062	TRANSISTOR 2SC1740SR(HKN, SWN)
Q852	1321251	TRANSISTOR 2SA1441(L, K)
Q855	5327031	TRANSISTOR 2SA673C
Q856	5327201	TRANSISTOR 2SC1741SQR
Q901	5327261	TRANSISTOR 2SB1326(Q)
Q906	5324631	TRANSISTOR 2SA1390C
Q913	5327101	TRANSISTOR 2SC3553(B/C)
Q914	5327021	TRANSISTOR 2SA844CD
QF1801	5721941	IC PROTECTOR(HKN, SWN)
QF901	5721941	IC PROTECTOR
QR1801	5327075	TRANSISTOR XDC144ES
QR1802	5327075	TRANSISTOR XDC144ES
QR1901	5327075	TRANSISTOR XDC144ES
QR2505	5327075	TRANSISTOR XDC144ES
QR2701	5323962	TRANSISTOR DTC144ES
QR2702	5327075	TRANSISTOR XDC144ES
QR2703	5323962	TRANSISTOR DTC144ES
QR2852	5327075	TRANSISTOR XDC144ES
QR2854	5327075	TRANSISTOR XDC144ES
QR2858	5327075	TRANSISTOR XDC144ES
QR2860	5327075	TRANSISTOR XDC144ES
QR402	5327075	TRANSISTOR XDC144ES
QR404	5327075	TRANSISTOR XDC144ES
QR405	5327075	TRANSISTOR XDC144ES
QR408	5327075	TRANSISTOR XDC144ES
QR409	5327076	TRANSISTOR XDA144ES
QR414	5327075	TRANSISTOR XDC144ES
QR415	5327075	TRANSISTOR XDC144ES
QR505	5327075	TRANSISTOR XDC144ES
QR506	5327075	TRANSISTOR XDC144ES
QR507	5327075	TRANSISTOR XDC144ES
QR508	5327075	TRANSISTOR XDC144ES
QR511	5327076	TRANSISTOR XDA144ES
QR512	5327075	TRANSISTOR XDC144ES
QR601	5327075	TRANSISTOR XDC144ES
QR607	5327075	TRANSISTOR XDC144ES
QR710	5327075	TRANSISTOR XDC144ES
QR711	5327076	TRANSISTOR XDA144ES
QR712	5327075	TRANSISTOR XDC144ES
QR804	5327075	TRANSISTOR XDC144ES
QR805	5327075	TRANSISTOR XDC144ES
QR806	5327075	TRANSISTOR XDC144ES
QR807	5327075	TRANSISTOR XDC144ES(HKN, SWN)
QR809	5327076	TRANSISTOR XDA144ES(HKN, SWN)
QR857	5327161	TRANSISTOR DTC143ZS
QR902	5327075	TRANSISTOR XDC144ES
QR907	5327075	TRANSISTOR XDC144ES
QR915	5327075	TRANSISTOR XDC144ES
QR916	5327075	TRANSISTOR XDC144ES
QR917	5327072	TRANSISTER DTA124ES
QR918	5327075	TRANSISTOR XDC144ES
ZD1533	5339258	DIODE HZS7-C3
ZD1534	5339291	DIODE HZS3B1
ZD2851	5339254	DIODE HZS30-1
ZD2852	5339468	DIODE HZS11B3
ZD2854	5339291	DIODE HZS3B1
ZD2855	5339268	DIODE HZS11B2
ZD2856	5339106	DIODE HZ16-3
ZD2857	5339282	DIODE HZS6-B2
ZD701	5339262	DIODE HZS6-C2
ZD703	5339262	DIODE HZS6-C2
ZD801	5339406	DIODE UTZJ30C
ZD851	5339257	DIODE HZS4
ZD852	5339107	DIODE HZ18-3
ZD853	5339253	DIODE HZS18-3
ZD854	5339253	DIODE HZS18-3
ZD901	5339262	DIODE HZS6-C2
ZD903	5339465	DIODE HZS3B3
ZD904	5339281	DIODE HZS11-A2
		TRANSFORMERS
T401	5261403	COIL, BIAS OSC
⚠T851	5214433	TRANSFORMER, POWER
T901	5261432	OSCILLATOR, BIAS
		COILS
L1216	5159149	CHOKE COIL 47UH
L1217	5159149	CHOKE COIL 47UH
L1218	5159146	CHOKE COIL 27UH
L1221	0770057	CHOKE COIL 100UH+-5%
L1222	0770062	CHOKE COIL 220UH+-5%
L1223	0770057	CHOKE COIL 100UH+-5%
L1233	0770057	CHOKE COIL 100UH+-5%
L1301	0770057	CHOKE COIL 100UH+-5%
L1301	5121581	CHOKE COIL 100UH(J)[MJA]
L1302	0770057	CHOKE COIL 100UH+-5%
L1303	0770057	CHOKE COIL 100UH+-5%
L1304	0770055	CHOKE COIL 68UH+-5%
L1401	5121294	COIL 100UH
L1402	5121294	COIL 100UH
L1403	5121173	COIL 15UH
L1404	5121289	COIL 22UH
L1405	5121294	COIL 100UH
L1431	5121291	COIL 33UH
L1432	5121291	COIL 33UH
L1441	5121294	COIL 100UH
L1601	5159077	CHOKE COIL 100UH+-10%
L1801	0770069	CHOKE COIL 820UH+-5%
L1802	0770069	CHOKE COIL 820UH+-5%
L201	0770047	CHOKE COIL 18UH+-5%
L202	0770047	CHOKE COIL 18UH+-5%
L203	0770057	CHOKE COIL 100UH+-5%
L204	0770044	CHOKE COIL 10UH+-5%
L205	0770045	CHOKE COIL 12UH
L207	0770062	CHOKE COIL 220UH+-5%
L208	0770054	CHOKE COIL 56UH+-5%
L209	0770051	CHOKE COIL 33UH+-5%
L210	0770061	CHOKE COIL 180 UH
L211	0770048	CHOKE COIL 22UH+-5%
L212	0770057	CHOKE COIL 100UH+-5%
L216	0770057	CHOKE COIL 100UH+-5%
L217	0770053	CHOKE COIL 47UH+-5%
L218	0770051	CHOKE COIL 33UH+-5%
L219	0770057	CHOKE COIL 100UH+-5%
L220	0770051	CHOKE COIL 33UH+-5%

SYMBOL-NO	P-NO	DESCRIPTION
L221	0770058	CHOKE COIL 120UH+-5%
L222	0770057	CHOKE COIL 100UH+-5%
L223	5121581	CHOKE COIL 100UH
L231	0770061	CHOKE COIL 180 UH
L243	0770048	CHOKE COIL 22UH+-5%
L244	0770056	CHOKE COIL 82UH
L245	0770047	CHOKE COIL 18UH+-5%
L301	0770051	CHOKE COIL 33UH+-5%
L302	0770051	CHOKE COIL 33UH+-5%
L303	0770064	CHOKE COIL 330UH+-5%
L304	0770066	CHOKE COIL 470UH+-5%
L305	0770068	CHOKE COIL 680UH+-5%
L311	0770057	CHOKE COIL 100UH+-5%
L312	0770046	CHOKE COIL 15UH+-5%
L313	0770057	CHOKE COIL 100UH+-5%
L314	0770057	CHOKE COIL 100UH+-5%
L315	0770055	CHOKE COIL 68UH+-5%
L351	5130431	COIL
L352	0770057	CHOKE COIL 100UH+-5%
L401	0770057	CHOKE COIL 100UH+-5%
L402	5159113	COIL, CHOKE 8.2MH
L4501	0770057	CHOKE COIL 100UH+-5%
L4502	0770057	CHOKE COIL 100UH+-5%
L501L	0770057	CHOKE COIL 100UH+-5%
L501R	0770057	CHOKE COIL 100UH+-5%
L701	5159154	CHOKE COIL 100UH
L801	0770057	CHOKE COIL 100UH+-5%
L802	0770053	CHOKE COIL 47UH+-5%
L803	0770057	CHOKE COIL 100UH+-5%
L804	0770057	CHOKE COIL 100UH+-5%
L851	5220411	COIL
L852	5220232	COIL, CHOKE 200UH
L901	0770057	CHOKE COIL 100UH+-5%
L902	0770057	CHOKE COIL 100UH+-5%
		MISCELLANEOUS
X1202	5779071	CRYSTAL
X1401	5781782	CRYSTAL 500KHZ
X1402	5784511	CRYSTAL 17.734MHZ
X1403	5781791	CRYSTAL
X1601	5781901	CRYSTAL
X1801	5784651	CRYSTAL(HKN, SWN)
X1802	5784652	CRYSTAL(HKN, SWN)
X1803	5784654	CRYSTAL(HKN, SWN)
X1901	5784476	CRYSTAL
X201	5778891	CRYSTAL
X301	5778871	CRYSTAL
X302	5778881	CRYSTAL
X701	5784473	CRYSTAL
X702	5783001	CRYSTAL
X901	5784479	CRYSTAL
BL1403	5272378	LC FILTER
BL4501L	5272376	FILTER
BL4501R	5272376	FILTER
BL851	5272371	LINE FILTER
BL852	5272376	FILTER
CN001	5813909	MINI CONNECTOR
CN002	5842361	MINI CONNECTOR
CN003	5843168	CONNECTOR
CN004	5886061	MINI CONNECTOR
CN005	5842926	MINI CONNECTOR
CN006	5842601	CONNECTOR
CN007	5844685	MINI CONNECTOR
CN023	5845732	MINI CONNECTOR

SYMBOL-NO	P-NO	DESCRIPTION
CN024	5842901	MINI CONNECTOR
CN043	5842321	MINI CONNECTOR
CN044	5844689	MINI CONNECTOR
CN2593	5744355	MINI CONNECTOR
CN793	5744455	MINI CONNECTOR
CN852	5810138	FASTEN LEAD
CN952	5744353	MINI CONNECTOR
CN991	5899937	WIRE, EARTH
CP1301	5164722	FILTER
CP1302	5130681	COIL
CP1303	5130682	COIL
CP1304	5164723	FILTER
CP1305	5164724	FILTER
CP1306	5130681	COIL
CP1401	0239058	FILTER
CP1802	5163972	FILTER(HKN, SWN)
CP1803	5164652	LC FILTER(HKN, SWN)
CP1804	5164652	LC FILTER(HKN, SWN)
CP351	5160521	BAND PASS FILTER
CP501L	5165351	FILTER
CP501R	5165352	FILTER
CT1801	5058491	TRIMMER 50PF(HKN, SWN)
CT1802	5058491	TRIMMER 50PF(HKN, SWN)
CT1803	5058491	TRIMMER 50PF(HKN, SWN)
DG701	5315331	FLUORESCENT INDICATOR TUBE
DL301	5786122	DELAY LINE
DL302	5785491	DLAY LINE
DL303	5786331	DELAY LINE
⚠FU851	5721061	FUSE 1.6A(HKN, SWN)
⚠FU851	5721483	FUSE 1.6A(J)
⚠FU852	5721063	FUSE 1.25A(HKN, SWN)
⚠FU852	5721482	FUSE 1.25A(J)
⚠FU853	5721061	FUSE 1.6A(HKN, SWN)
⚠FU853	5721912	FUSE 1.6A 250V(J)
IR701	5317191	MODULE, INF
J4501	5696173	PLATE, JACK
J4502	5696172	PLATE, JACK
J4503	5696174	PLATE, JACK
J4504	5674611	JACK
PG 101	5666584	MINI PLUG
PG1301	5661824	MINI PLUG
PG1301	5668161	SOCKET(J)
PG1302	5661824	MINI PLUG
PG1302	5668164	SOCKET(J)
PG1425	5666725	MINI PLUG
PG1426	5666725	MINI PLUG
PG1688	5666724	MINI PLUG
PG1705	5665632	MINI PLUG
PG1799	5661795	MINI PLUG
PG1801	5668161	SOCKET(HKN, SWN)
PG1802	5668164	SOCKET(HKN, SWN)
PG215	5668167	MINI PLUG(HKN, SWN)
PG215	5669577	PLUG(J)
PG216	5668167	MINI PLUG(HKN, SWN)
PG216	5669577	PLUG(J)
PG217	5668161	SOCKET(HKN, SWN)
PG217	5669571	PLUG(J)
PG218	56681643	SOCKET(HKN, SWN)
PG218	5669574	PLUG(J)
PG2501	5668181	MINI PLUG
PG2502	5668184	MINI PLUG
PG2511	5668182	MINI PLUG
PG2512	5668185	MINI PLUG
PG2515	5668187	MINI PLUG
PG2516	5668187	MINI PLUG

SYMBOL-NO	P-NO	DESCRIPTION
PG2517	56681813	MINI PLUG
PG2518	56681843	MINI PLUG
PG2824	5666142	MINI CONNECTOR
PG2851	5665061	MINI PLUG(HKN, SWN)
PG301	5661814	MINI PLUG
PG302	5661814	MINI PLUG
PG303	5666564	MINI PLUG
PG4511	5668162	MINI PLUG
PG4512	5668165	MINI PLUG
PG501	5666143	MINI PLUG
PG503	5666563	MINI PLUG
PG603	5666562	MINI PLUG
PG620	5665644	MINI PLUG
PG621	5665643	MINI PLUG
PG643	5666575	MINI PLUG
PG644	5666567	MINI PLUG
PG703	5665951	MINI PLUG
PG703B	5692261	SOCKET
PG704	5668652	MINI PLUG
PG704B	5692402	MINI PLUG
PG705	5665642	MINI PLUG
PG720	5665634	MINI PLUG
PG721	5665633	MINI PLUG
PG823	5666169	MINI PLUG
PG852	5665056	TEST PIN(HKN, SWN)
PG901	5666568	PLUG
PG902	5666435	PLUG
PG904	5666561	MINI PLUG
PG906	5666574	PLUG
PG923	5666169	MINI PLUG
PG924	5666142	MINI CONNECTOR
S 141	5635321	SWITCH
S 142	5635331	SWITCH
S1701	5621781	SWITCH
S1702	5621892	SWITCH
S1703	5621781	SWITCH
S1704	5610981	SWITCH
S1705	5621781	SWITCH(HKN, SWN)
S2501	5624133	SLIDE SWITCH
S701	5635061	SWITCH
S702	5635061	SWITCH
S851	5604741	SWITCH(HKN, SWN)
S851	5605343	SWITCH(J)
SWR751	5610781	SWITCH
TH1201	5340361	THERMISTOR ERTD2FHL(J)
TH851	5391511	THYRISTOR CR8PM

SYMBOL-NO	P-NO	DESCRIPTION

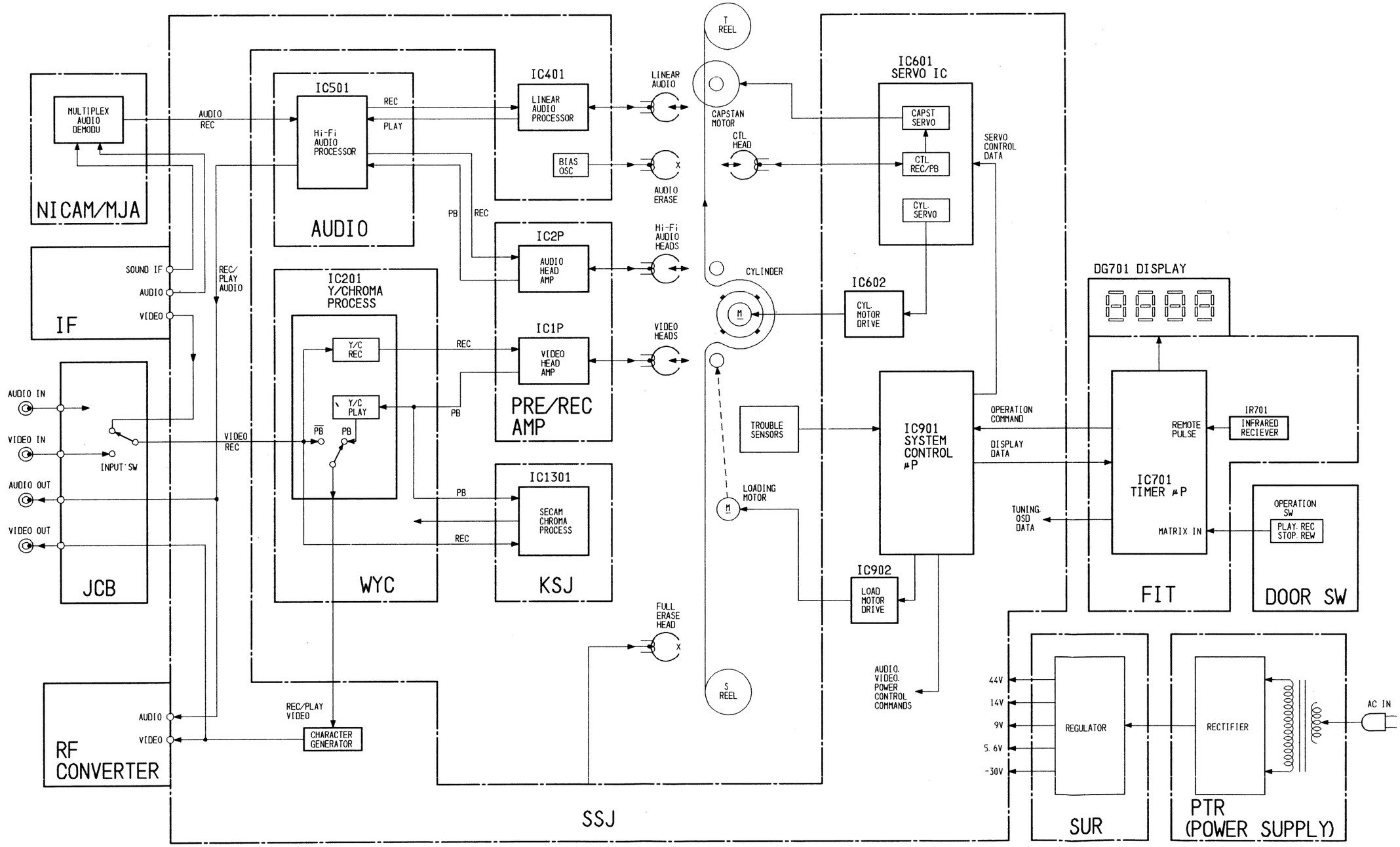
MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
101	6008657	COVER, TOP
102	6008662	COVER, BOTTOM
103	4330291	FELT
104	4723701	PANEL, FRONT[J]
104	4723703	PANEL, FRONT[SWN]
104	4723704	PANEL, FRONT[HKN]
105	4730265	DOOR, CASSETTE
108	6089372	KNOB
109	6338213	HINGE
110	6442724	INSULATOR
111	4723271	PANEL, REAR
112	7478872	SHIELD
113	6811923	PIECE, FRAME
114	6528881	PLATE
115	6811871	HOLDER
116	6407471	COVER, FUSE[SWN, J]
116	6407471	COVER, FUSE[HKN]
117	7744291	FELT, LEG
118	6089351	KNOB
⚠119	5850792	CORD, POWER
⚠119	5851071	CORD, POWER[J]
120	6484441	HOLDER
121	4160954	PANEL, DOOR[J]
121	4160955	PANEL, DOOR[HKN, SWN]
122	6484882	PIECE, DOOR
123	7442821	BRACKET
124	6089402	KNOB, JOG
125	4743622	KNOB
126	5604701	SWITCH DOOR
127	6809922	UNIT, DAMPER
128	6089435	KNOB, SHUTTLE
130	6714215	NYLON RIVET
132	6811831	PIECE, REAR
133	1730321	TUNER IF UNIT[SWN, J]
133	1730331	TUNER IF UNIT[HKN]
134	5587841	CONVETOR, RF
135	5886821	CONNECTOR
138	6529161	PLATE
140	7744691	CUSHION
141	4330292	CUSHION
142	7738771	WASHER
143	4743621	KNOB
202	6915922	SCREW
203	7469051	BASE
204	5434061	HEAD, AUDIO CONTROL
205	6304906	SPRING
206	6522752	SPRING
207	7785673	NUT
208	5571851	MOTOR, CAPSTAN
209	6555504	SPRING
210	6416021	REEL, SUPPLAY
211	7789123	POLYSLIDER WASHER
212	6416621	REEL, TAKE UP
213	7789123	POLYSLIDER WASHER
214	6975768	ARM, PRESSER ROLLER
215	6821685	BLOCK, SLIDER
216	7412823	PLATE
217	7429651	GEAR, LOADING(L)
218	7429661	GEAR, LOADING(R)
219	6915843	BASE, GUIDE ROLLER(IN)
220	4583122	GUIDE ROLLER
221	6915862	BASE, GUIDE ROLLER(OUT)[HKN, SWN]
221	6915862	BASE, GUIDE ROLLER(OUT)[J]
222	6911004	BASE
223	5445851	HEAD FULL ERASE
224	6820333	BRAKE
225	4508237	GUIDE, TAPE
226	6555431	SPRING
227	7794953	BAND, TENTION
228	6806383	SHAFT
229	6555446	SPRING
230	6897265	BRACKET
231	6896752	ARM
232	6555061	SPRING
233	7795112	ARM, IMPEDANCE
234	7469012	ARM
235	7795473	BLOCK, LOADING
236	7428089	BRACKET
237	7473201	BRACKET
238	6915891	ARM
239	7468972	ARM
240	7473191	BRACKET
241	6897241	ARM
242	6551152	SPRING
243	6804794	ARM
244	6821382	ARM
245	6556453	SPRING
246	6821392	ARM
247	6555485	SPRING
248	6440401	WORM WHEEL
249	6440552	GEAR, MODE
250	6440541	GEAR
251	6555052	SPRING
252	7799012	WASHER
253	6820103	ARM
254	6556315	SPRING
255	4508235	GUIDE
256	6440491	GEAR
257	6437873	GEAR
258	6437893	GEAR
259	6440481	GEAR
260	7788341	WASHER
261	1390561	PWB ASSY PRE AMP
262	6807861	ARM
263	7473311	BRACKET
264	6820322	BRAKE
266	6320576	SPRING
267	6916041	ARM
268	6820151	ARM
269	7795281	HOLDER, MOTOR
271	7429631	BRACKET
272	7429641	BRACKET
273	7472125	ARM
275	7788348	WASHER
281	7472093	BRACKET
283	6821621	ARM
302	6821873	BASE, CLUTCH
303	6358251	BELT, REEL
304	6821841	ARM
305	6434852	RACK
402	7412575	BRACKET, SIDE(R)
403	6804542	BRACKE, SIDE(R)
404	6896971	WORM WHEEL ASSY
405	6435571	WORM
406	4508221	WORM SHAFT
407	6896623	ARM, DOOR

SYMBOL-NO	P-NO	DESCRIPTION
408	6896632	ARM-SWITCH
409	6302474	SPRING
410	6897041	ARM-SWITCH
411	7412583	BRACKET-GEAR
412	7449179	HOLDER
413	7474441	BASE, HOLDER
414	6896664	HOLDER, CASSETTE (R)
415	7428113	HOLDER, STAY
416	6820361	ARM
417	6897001	ARM
418	6556241	SPRING
419	6896673	HOLDER, CASSETTE (L)
420	7412944	ARM
421	6555772	SPRING
422	7412956	SPRING
423	6806521	HOLDER, FRONT
424	7580791	SHAFT ASSY
425	7428982	BRACKET
426	7794391	WASHER
501	5436179	CYLINDER, ASSY (CY-Z6P5)
502	5568134	MOTOR, CYLINDER
503	5792635	BRUSH, CYLINDER
901	8699412	SCREW (3X12) BLACK
902	8699408	SCREW
904	8699416	SCREW(BT3X16)BLACK
905	7781582	FALT SCREW-3MMDX10MM(BLACK)
906	7785351	SCREW (4X14)
907	8691308	SCREW BT2.6MMDX8MM
908	8724105	SCREW (2X5)
909	86914063	3X6 BT BIND SCREW
910	8639108	SCREW(2X8)
911	8691408	SCREW (3X8)
951	8691410	SCREW
953	8699408	SCREW
954	7781872	SCREW-3MMDX8MM
955	7773086	SCREW
956	8741414	SCREW (3X14)
957	8691412	SCREW (3X12)
958	8691408	SCREW (3X8)
959	8711406	SCREW - 3X6 PAN HEADSCREW

SYMBOL-NO	P-NO	DESCRIPTION
960	8741412	SCREW (B3X12)
961	7785941	SCREW
962	87114043	SCREW - 3X4 PAN HEADSCREW
963	7775581	SCREW(3X14)
964	8741416	BIND HEAD SCREW 3MMDX16MM
966	8691308	SCREW BT2.6MMDX8MM
998	7784131	PAN HEAD SCREW
999	8711405	PAN HEAD SCREW(3X5)
		FOR ACCESSORIES
	5699421	SOCKET[HKN, SWN]
	5661341	PLUG FOR F-PAL
	5747741	CONNECTOR CORD[HKN, SWN]
	5856023	CORD[J]
	5615144	REMOTE HAND SET
	5860892	CABLE[J]
	5898876	CONNECTER CORD[HKN, SWN]
	5662261	SIEMENS ADAPTOR[J]
		FOR REMOTE CONTROL
1	5615336	COVER
2	5615366	CASE, UPPER
3	5615392	CLEAR PLATE
4	5615411	CASE, BOTTOM
5	5615401	LID, BATTERY
6	5615501	IC M50934-050FP
7	5615661	LED
8	5615511	CRYSTAL
9	5615491	KNOB, JOG
10	5615481	KNOB, SHUTTLE

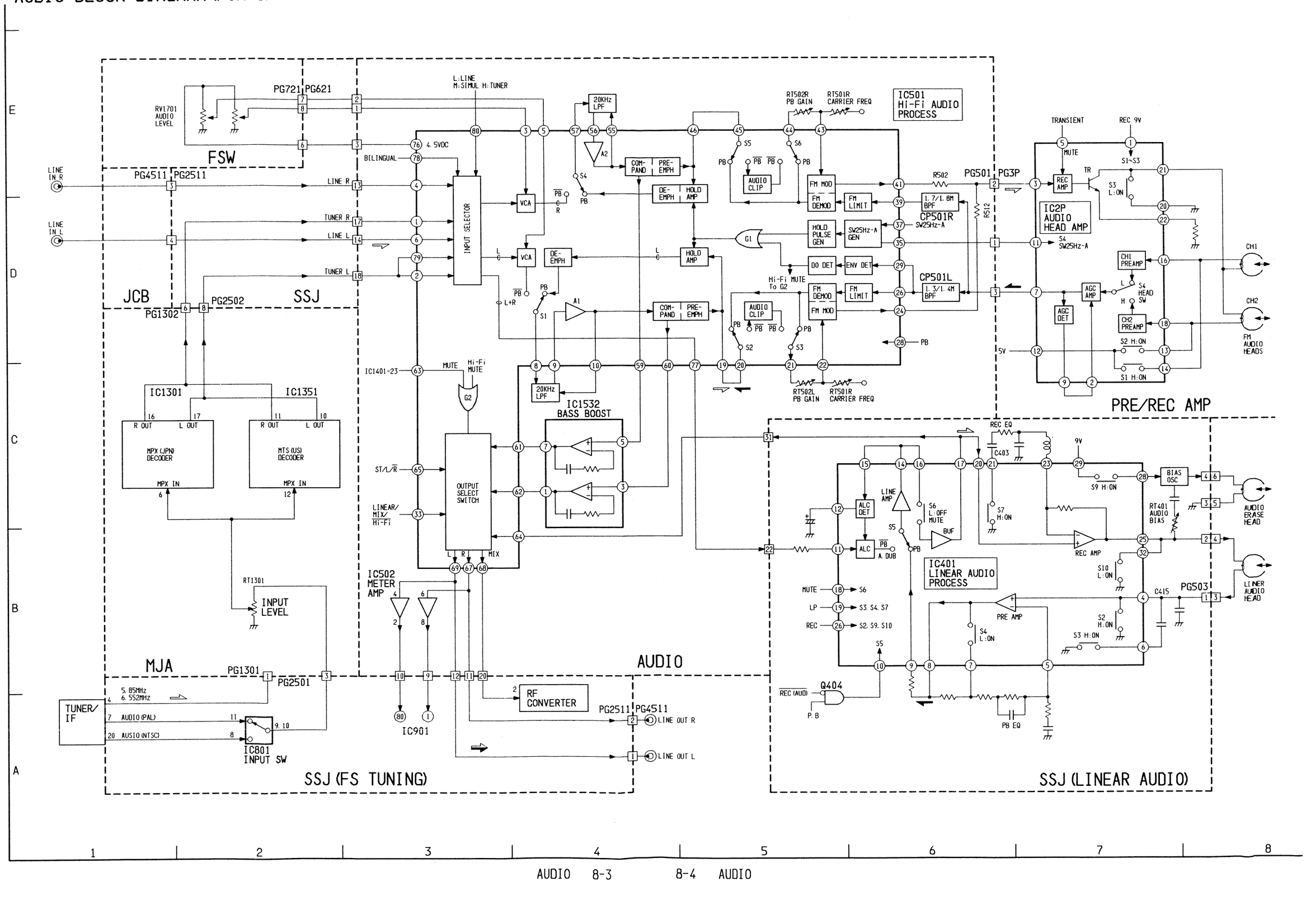
OVERALL BLOCK DIAGRAM



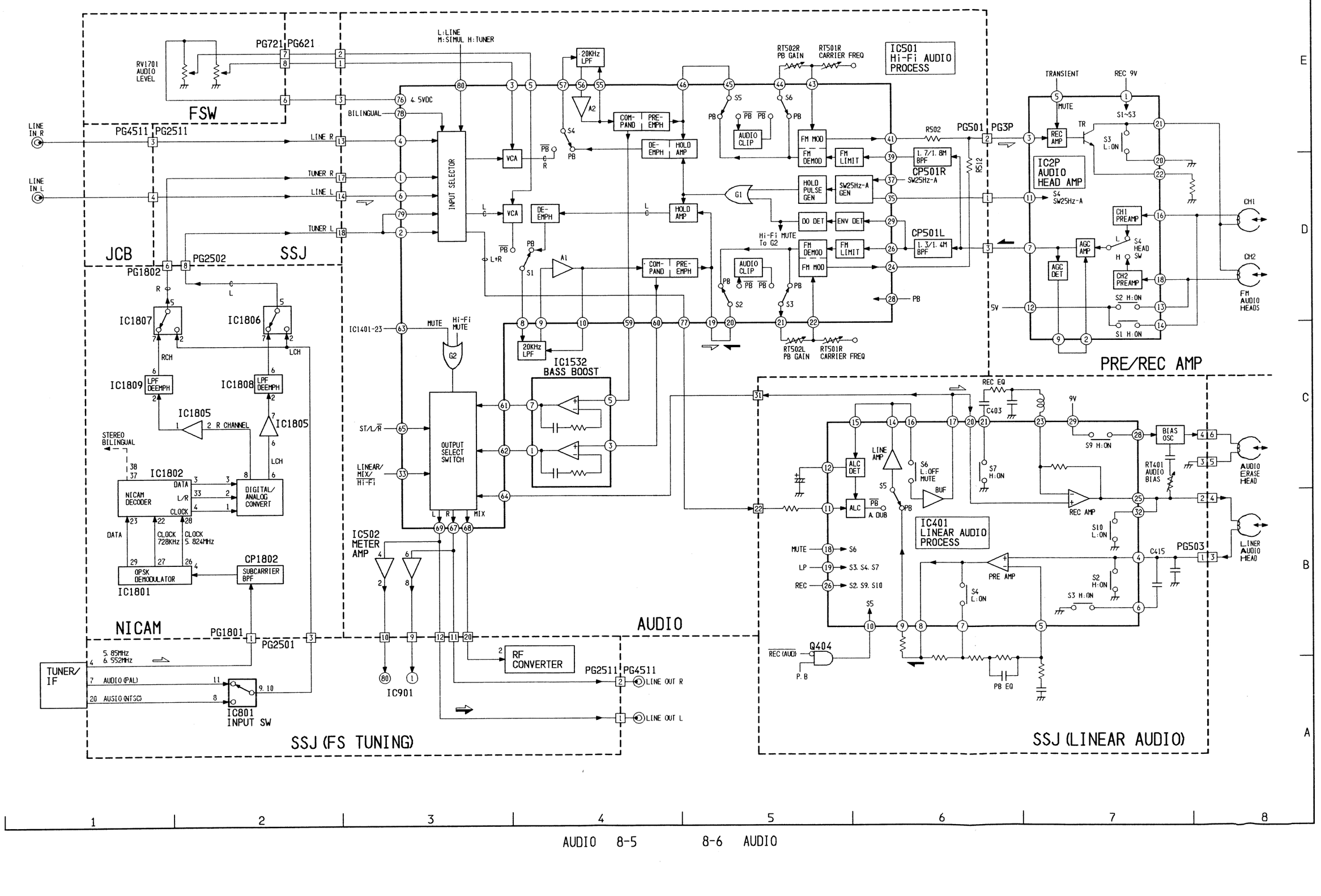
1 2 3 4 5 6 7 8

OVERALL BLOCK 8-1 8-2 OVERALL BLOCK

AUDIO BLOCK DIAGRAM (FOR J)

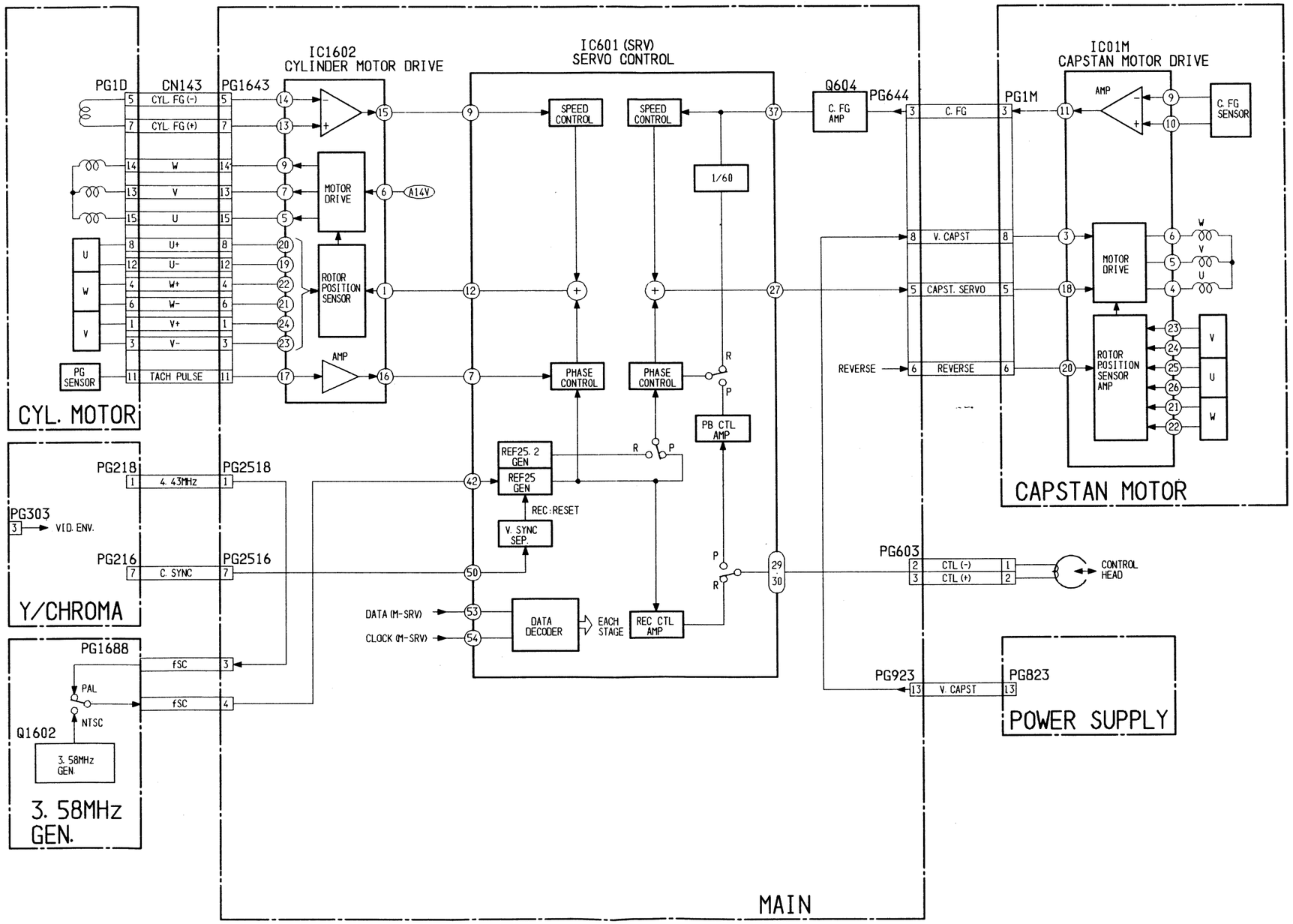


AUDIO BLOCK DIAGRAM (FOR SWN, HKN)



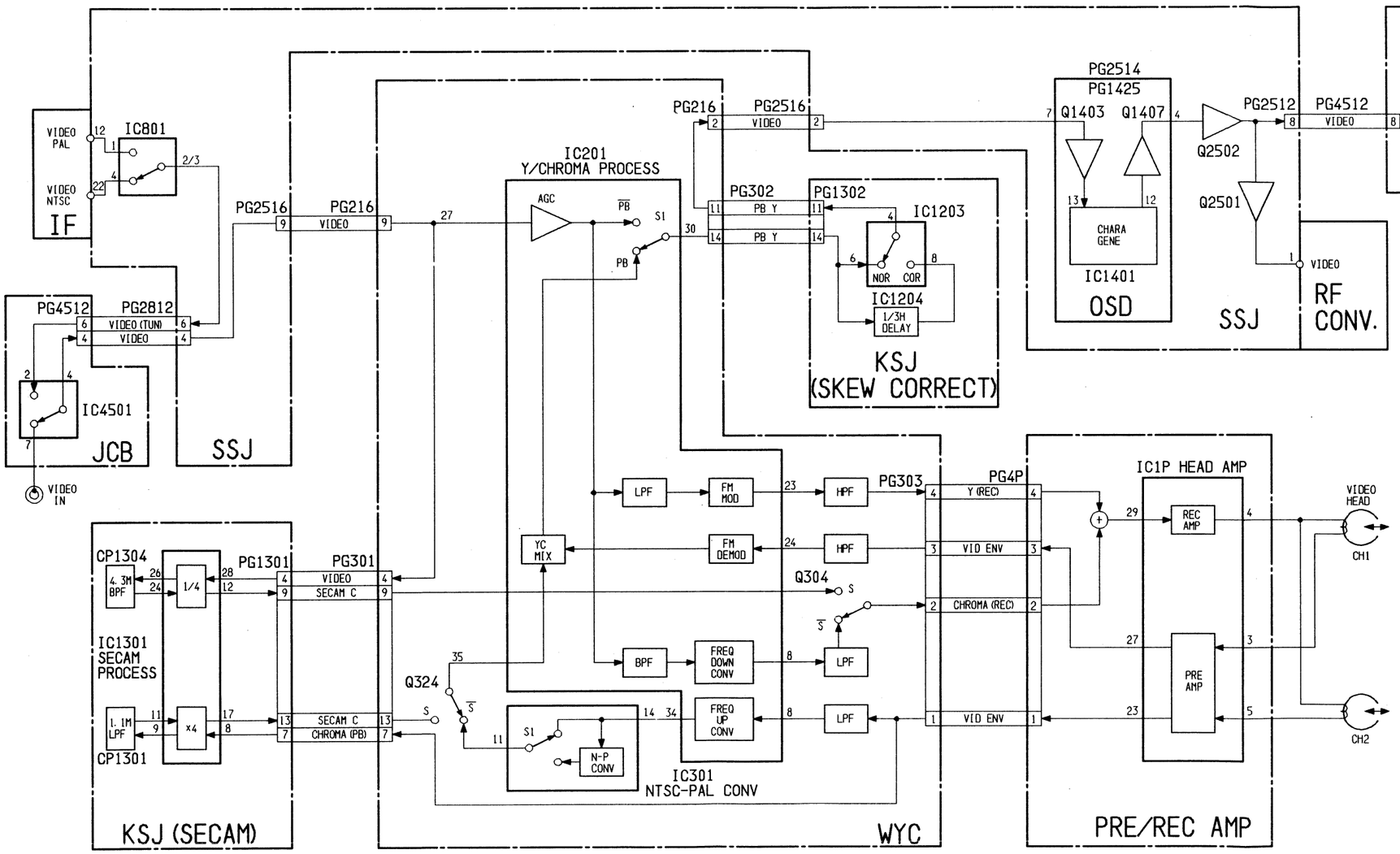
AUDIO 8-5 8-6 AUDIO

SERVO BLOCK DIAGRAM

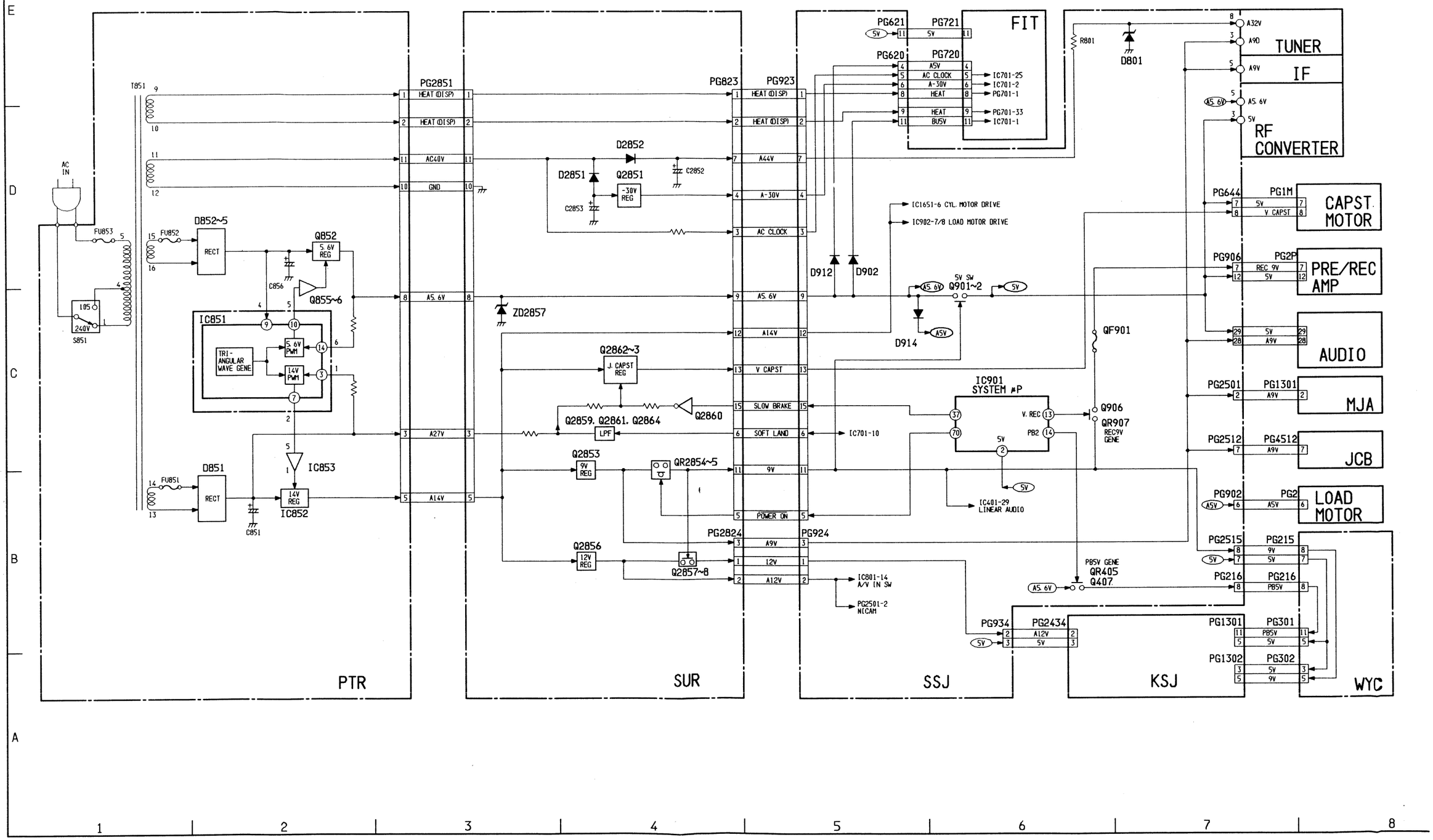


SERVO 8-7 8-8 SERVO

Y/CHROMA BLOCK DIAGRAM



POWER SUPPLY BLOCK DIAGRAM



System Control μP (IC901) Pin Functions

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	Analog	METER L	Receives a DC voltage indicating the L channel audio level and lights the level meter in the display according to the input level.
2	I	5V	Vcc	5V power supply.
3	I	5V	Vcc	5V power supply
4	I	5V	Vcc	5V power supply.
5	O	H	HEAD SW	Field head select output. Outputs "Hi" in the slow and frame advance modes to select the same heads as those used in normal playback.
6	O	H	TRANS/SEARCH	Outputs "Hi" during transient time when the playback mode is switched (PB--STILL--PB) and during search to select the suitable combination of the video heads.
7	O	H	TRICK PLAY	Outputs "Hi" during trick play to switch the characteristics of the luminance and chrominance circuits.
8	O	H	CURRENT UP/ CAPST GAIN	Outputs "Hi" to increase the recording current of the video signal for about 7 s (PAL SP speed) after the assemble mode has been released or tape has been loaded in the recording mode. Outputs "Hi" to reduce the gain of the capstan motor driver and motor noise in the F.FWD and REW modes.
9	O	H	REC MUTE	Outputs a muting pulse which inhibits recording of video signal during loading.
10	O	H	CONV NTSC	Outputs "Hi" to the RF converter and audio/video input switch to let the converter output the NTSC TV signal and the input switch select the NTSC video and audio signals. The same logic signal as NTSC/PAL at pin 66 is output in modes other than playback. In the playback mode the logic level matches the SW3.58NTSC level at pin 79.
11	O	H	REC	Outputs "Hi" to activate the full-erase circuit in the normal record modes other than the A.DUB and V.DUB modes.
12	O	H	AUDIO REC	Outputs "Hi" to set the video circuit to the recording mode.
13	O	H	VIDEO REC	Outputs "Hi" to set the audio circuit to the recording mode..
14	O		PB 2	Outputs "Hi" during playback to set each circuit to the playbak mode.
15	O	H	PB 1	Outputs "Hi" in modes other than recording to set the preamplifier P.C.B to the playback mode.
16	O	H	MUTE (LINE)	Outputs "Hi" to mute the audio signal during loading in the playback mode and in the still playback mode.
17	I	Pulse	DATA(AT-S)	Receives the tracking control data that will be sent to the servo IC to control the tracking.
18	O	Pulse	DATA(S-AT)	Outputs the commands necessary to search the optimum tracking data to the autotracking μP.
19	O	Pulse	CLOCK(S-AT)	Used as the clock pulse necessary to communicate between the system control and autotracking μPs.
20	I	H	S.VHS DATA	Not used.
21	I	H	M.STATE 2	Mechanism state inputs. Detect the operation mode of the mechanism using the rotary mechanism state switch and specify the logic levels at LOAD and UNLOAD pins to control the tape loading motor.
22	I	H	M.STATE 1	
23	I	H	M.STATE 0	

Position	1 EJECT	2 UNLOAD STOP	3 LOAD STOP	4 F.FWD REW	5 PB REC	6 STILL SLOW	7 REV. SLOW	8 REV.PB/ SEARCH	TRAN-SITION
Pin 21	Hi	Hi	Hi	Hi	Lo	Lo	Lo	Hi	Lo
Pin 22	Hi	Hi	Lo	Lo	Hi	Hi	Lo	Hi	Lo
Pin 23	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Lo

Pin No.	I/O	Active Level	Abbreviation	Function
24	I	H	TAB	Pin for safety tab detection. No tab: "Lo". Inhibits recording when "Lo" is input.
25	I	H	C. PAUSE	When "Hi" is input, the μP sets the VTR to the pause mode.
26	I	L	$\overline{\text{CTL DUTY}}$	When "Lo" is input, the VTR performs playback for 10 seconds in the scana indexing mode. Counts the number of the "Lo" index pulses to search the designated programme in the random access indexing mode.
27	I	Pulse	T. REEL	Take-up reel pulse input. Used to check whether or not the take-up reel disk is rotating. If the period is too long, commands unloading to prevent damage to the tape. The tape remaining time is calculated from the period of the take-up and supply reel pulses.
28	I	Pulse	S. REEL	Supply reel pulse input. Used to calculate the tape remaining time.
30	O	L	$\overline{\text{CAPST.PHASE}}$	Outputs "Lo" to disable the capstan phase control circuit during loading. During this period, the system control μP detects the TV system and tape speed of the recorded tape to be played back.
31 32	O O	H H	UNLOAD LOAD	Control the rotation of the tape loading motor via the loading motor driver.

	STOP	LOAD	UNLOAD	BRAKE
Pin32	Lo	Hi	Lo	Hi
Pin31	Lo	Lo	Hi	Hi

33			GND	Ground
34	O	L	$\overline{\text{A.DUB}}$	Outputs "Lo" to set the audio circuit to the audio dubbing mode.
35	O	H	ATR LOAD	Outputs "Hi" to activate the data communication function of the autotracking μP.
36 39	O O	H L	SWAY 2 SWAY 1	Output shake correction pulses to the cylinder servo circuit in the slow mode. The width and phase of two pulses are different from each other.
37	O	Pulse	SLOW BRAKE	Outputs "Hi" to regulate the power supply voltage for the capstan motor and stops the tape at the optimum position when it is driven intermittently in the slow mode.
38	O	H	ACCEL/$\overline{\text{BRAKE}}$	Outputs a "Hi" pulse to drive the capstan motor and advances the tape by one frame in the intermittent drive mode. Outputs "Lo" to stop the capstan motor when the tape is driven intemittently.
40	O	H/O/L	MONITOR	Outputs a 3-state signal to select the audio signals, stereo, L channelor R channel.
41	O	L	$\overline{\text{BASS BOOST}}$	Outputs "Lo" to activate the bass boost circuit.
42	O	H	ENABLE TIMER	Outputs "Hi" to activate the data communication function of the timer μP
43	O	H/L	LINEAR/$\overline{\text{Hi-Fi}}$	Outputs a 3-state signal to let the Hi-Fi audio processing IC select the audio signal, linear, mixed or Hi-Fi in the playback mode..
44	O	H	REVERSE	Outputs "Hi" to rotate the capstan motor in the reverse direction.
45	O	H	F.FWD/REW	Outputs "Hi" during the F.FWD and REW modes to reduce the gain of the CTL amp in the servo IC and so the amplitude of the CTL signal is constant.
46	I	Pulse	C.FG	Divided Capstan FG input. 1. Stops tape unloading when there is no input during unloading to prevent damage to the tape. 2. When pause is instructed and released in the recording mode, the timing of recording restart is determined by counting up and down the number of C.FG signals to minimize the overlapped section.
47	I	Pulse	V.SYNC	Used to discriminate the TV system when the line-in mode is selected in modes other than playback. When the tuner mode is selected the TV system matches that of the channel designated by the timer μP.

Pin No.	I/O	Active Level	Abbreviation	Function
48	I	Pulse	$\overline{\text{CTL}}$	Counted to display the real time counter. Used as the timing pulse to produce the brake pulse in the intermittent drive mode. Used to detect the television system and tape speed of recorded tapes in the playback mode.
49	I	Pulse	TRACK. TRIG.	Used as the reference signal for tracking control.
50	I	Pulse	DATA (T-S)	Timer data input. Operation commands are instructed by the timer μP via this pin.
51	O	Pulse	DATA (S-T)	Outputs data to the timer μP. The data includes the modes of operation, remaining time, tape speed, etc.
52	I	Pulse	CLOCK (S-T)	Used as the clock pulse necessary to communicate between the system control and timer μPs.
53	I	Pulse	SW25/30Hz	Used to generate the ACCEL pulse in the slow mode. The period is monitored to judge whether or not the cylinder is rotating normally. If the period is too long, the μP commands unloading to prevent damage to the tape.
54			GND	Ground
55 56	I O	AC AC	OSC O OSC I	32 KHz clock oscillator input/output. Not used in this unit.
57			GND	Ground
58 59	O I	AC AC	OSC O OSC I	4.19 MHz system clock oscillator input/output pins.
60	I	L	$\overline{\text{RESET}}$	The μP is initialized when "Lo" is input.
61	O	H	SERVO NTSC	Outputs the same logic signal as NTSC/$\overline{\text{PAL}}$ at pin 66 in the playback, recording and stop modes. In the F.FWD, REW and cassette loading and ejection modes, outputs "Hi" to run the capstan motor at the proper speeds specified for the NTSC system. NTSC: "Hi".
62	O	Pulse	CLOCK (S-SRV)	Outputs the clock pulse necessary to transfer data to the servo IC.
63	O	Pulse	DATA (S-SRV)	Outputs data to the servo IC. The data includes modes of operation (PB, REC, ASSEMBLE, CYL.ON), tape speed, tracking data, etc.
64	O	H	BLUE BACK	Outputs "Hi" to make the background of the screen blue in the OSD menu and programme review modes, etc.
65	O	H	REC 4.43 NTSC	Outputs "Hi" to enable recording of NTSC signal with a 4.43 MHz subcarrier frequency. Set to "Hi" when "Hi" is supplied to pin 79 SW3.58NTSC from the 3.58NTSC/4.43NTSC/PAL60 select switch in the recording mode.
66	O	H/L	NTSC/$\overline{\text{PAL}}$	Outputs the TV system discrimination signal. NTSC: Hi.
67	O	L	$\overline{\text{SIMULCAST}}$	Outputs "Lo" to select the line-in audio signal in the simulcast mode.
68	O	H	TUNER/$\overline{\text{LINE}}$	Outputs "Hi" to select the tuner video and audio for the input signals.
69	O	H	TV/$\overline{\text{VCR}}$	TV/VTR switching signal output. Not used.
70	O	L	$\overline{\text{POWER ON}}$	Outputs "Lo" to activate the power supply circuit.
71	O	H	VOCAL CANCEL	Outputs "Hi" to activate the vocal cancel circuit. Not used in this unit.
72	O	H	OSD NTSC	Outputs "Hi" to let the character generator produce characters synchronised with the NTSC signal. The polarity of the signal is the same as NTSC/PAL at pin 66, however, the timing of generation is slightly different.
73			GND	Ground
74	I	Lo	$\overline{\text{NO AUDIO}}$	Starts playback when "Lo" is input in the Karaoke search mode. Not used in this unit.
75	I	H/L	CST UP/DOWN	Detects the insertion, ejection and completion of cassette loading to control cassette loading and unloading.
76	I	L	$\overline{\text{FWD END}}$	Supply end sensor input . Stops the tape when "Lo" is input.
77	I	L	$\overline{\text{REW END}}$	Take-up end sensor input. Stops rewind when "Lo" is input.

Pin No.	I/O	Active Level	Abbreviation	Function
78	I	L	$\overline{\text{X TEST}}$	"Lo" is applied for testing. Not used in this unit.
79	I	H	SW 3.58 NTSC	Receives a logic signal supplied from the 3.58NTSC/4.43NTSC/PAL60 select switch to switch the logic levels at pins 10 and 65.
80	I	Analog	METER R	Receives a DC voltage indicating the R channel audio level and lights the level meter in the display according to the input level.

Timer μP (IC701) Pin Functions

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	5 V	Vcc	Pin for power supply.
2	I	-30V	VDISP	Negative power supply.
3	I	Lo	$\overline{\text{Hi-Fi INDI}}$	Displays "Hi-Fi" in the display when "Lo" is input.
4	I	Analog	S-CURVE	Detects the state of tuning in the tuning preset mode.
5 6	I I		DIAL + DIAL -	The timer μP detects the phase difference between the pulses input these pins and directs the system control μP to advance frames forward or backward one by one according to the phase difference.
7	O	Hi	LOAD(ROM)	Activates the data communication function between the timer μP and EAROM.
8	O	Hi	LOAD(TU)	Activates the data communication function between the timer μP and tuning interface IC.
9	O	Hi	LOAD(OSD)	Activates the data communication function between the timer μP and character generator.
10	O	Pulse	SOFT LANDING	Outputs a PWM (pulse width modulation) signal to regulate the power supply voltage of the capstan motor. The duty ratio of the pulse varies depending on the length of the tape to be taken up.
11	O	Hi	SAP SET	Outputs "Hi" to select the SAP audio when the SAP mode is set using the OSD function.
12	O	Pulse	CLOCK(TI-R/O/TU)	Sync signal to communicate data between the timer μP and EAROM, and to transfer data from the timer μP to the character generator and tuning interface IC.
13	O	Pulse	DATA(TI-R/O/TU)	Outputs tuning data and timer recording programmes to the EAROM, OSD data to the character generator and tuning data to the tuning interface IC.
14	I	Pulse	DATA(R-TI)	Receives the tuning data and the timer recording programmes which have been written to the EAROM.
15	I	Pulse	CLOCK (S-Ti)	Sync signal to communicate data between the timer μP and system control μP.
16	O	Hi	ENABLE(Ti)	Activates the data communication function between the timer μP and system control μP.
17	O	Pulse	DATA (Ti-S)	Outputs operation commands to the system control μP.
18	I	Pulse	DATA (S-T)	Receives codes representing modes of operation to display them on the screen and in the FL display.
19	O	H/L	$\overline{\text{I/GK}}$	Outputs a logic signal to select the audio modulation system of the RF converter. The logic level can be switched by the remote control using the OSD function.
20	I	Lo	$\overline{\text{BILINGUAL}}$	Displays "BILING" in the display when "Lo" is input.
21	I	Pulse	H.SYNC	The μP judges that a TV station is tuned normally when a H. sync signal is input in the channel preset mode and can preset the station into the memory.
22	I	Lo	$\overline{\text{STEREO}}$	Displays "STEREO" in the display when "Lo" is input.
23	O	Hi	KARAOKE	Enables the KARAOKE mode in which KARAOKE search function is possible when "Hi" is input.
24	O	Lo	$\overline{\text{MONO SET}}$	Outputs "Lo" to set the multiplex audio demodulator to the monaural mode. The logic level can be switched by the remote control using the OSD function.
25	I	Lo	AC CLOCK	Updates the clock using the incoming AC signal. Detects a power failure and sets the μP to the back-up mode when there is no input.
26	I	Pulse	IR PULSE	Receives the remote control signal.
27	I	Lo	$\overline{\text{RESET}}$	Initializes the timer μP.

Pin No.	I/O	Active Level	Abbreviation	Function
28 29	I O	AC AC	OSC IN OSC OUT	Generates a 32 kHz reference clock signal. It is used to update the clock in models that do not use the mains frequency as the reference signal or during power failures.
30 31	I O	AC AC	OSC IN OSC OUT	Generates a 4 MHz system clock signal.
32		Lo	Vss	Pin for power supply.
33 34 35 36	I I I I	Hi Hi Hi Hi	MATRIX 3 MATRIX 2 MATRIX 1 MATRIX 0	Key matrix input ports
37	O	Hi	TAPE-IN LED	Lights the OPERATE LED.
39 50	O O	Hi Hi	GRID 12 GRID 1	Output grid drive pulses.
51 64	O O	Hi Hi	SEGMENT (n) SEGMENT(a)	Output segment drive pulses and key scan pulses.

Diode Matrix Functions (D725, D726, D727, D728)

Diode	Presence	Function
D725	Yes	The clock goes 60 times as fast as the correct time. Used to check the function of the clock
	No	The clock goes at the correct speed.
D726	Yes	The KARAOKE function is enabled.
	No	The KARAOKE function is disabled.
D727/D728	Yes/Yes	Japanese TV channels can be received.
	Yes/No	US TV channels can be received.
	No/Yes	European TV channels can be received using a tuner with an IF frequency of 38.9 MHz.
	No/No	European TV channels can be received using a tuner with an IF frequency of 38.0 MHz.

Autotracking μP Pin Functions

Pin No.	I/O	Active Level	Abbreviation	Function
1	I	Lo	RESET	Initializes the microprocessor.
2	I	Hi	TRACK TRIGGER	Used as a synchronizing signal to execute autotracking.
5	I	DC	VIDEO ENV.	Inputs a DC voltage representing the envelope of the playback video FM signal and stores it in a register in the IC to search the maximum envelope.
5	I	DC	AUDIO ENV.	Inputs the audio FM envelope detected by the envelope detector on the preamp P.C.B. The μP controls the tracking control circuit in the servo IC so that the input level becomes maximum in the tracking setting mode. When there is no input, the μP monitors the level at the VIDEO ENV. pin to optimize tracking.
8	O	H	MUTE(FTZ)	Outputs "Hi" to mute audio signals when there is no H. sync at the timer μP in the tuner mode. Set to "Lo" in the line-in and playback modes. Used as an expanded output port for the timer μP.
16	I	Pulse	$\overline{\text{CTL}}$	Used to measure the state of the tracking control.
17	I	Hi/Lo	CST UP/DOWN	Monitors whether or not a cassette is ejected. The μP initializes the tracking data when the cassette is ejected.
19	O	Lo	$\overline{\text{NO ENVELOPE}}$	Outputs "Lo" to defeat a H.sync signal to be input to the timer μP when there is no input at the VIDEO ENV. and AUDIO ENV. pins, making the screen blue.
20	I	Hi	PB2	Automatic tracking control function is enabled when "Hi" is input.
21 22	I I	Hi Hi	LP SP	The μP starts the automatic tracking setting operation when the tape speed is switched. These pins monitor the tape speed.
23	I	Hi	ENABLE(ATR)	"Hi" enables the μP to communicate with the system control μP.
24	I	Pulse	CLOCK	Sync signal for data communication
25	O	Pulse	DATA(AT-S)	Outputs commands and information to the system control μP in the form of 8-bit serial digital data.
26	I	Pulse	DATA(S-AT)	Receives 8-bit serial data from the system control μP, including commands and information for autotracking and data for the expanded output ports.
27 28	O I	AC AC	OSC O OSC I	Generates a 4 MHz system clock signal to activate the μP.
30	I	Hi	Vcc	Supplies DC power to the μP.

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